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Slow Motion Camera in Rubber Work

IT MAY seem odd to suggest any slackening of pace where profitable production depends so much upon speed; yet there is a real advantage in the study of mechanical operations through the slow motion picture camera. For a score of years such cameras have been made to take on an average of 240 pictures a second; now one takes 500, although but the usual 16 pictures a second are projected on a screen. As the microscope aids the eye by making almost invisible things look large, this camera, by markedly retarding motion, gives accurate vision of a multitude of movements, unsuspected, yet important, occurring far too fast to be ordinarily observed. In widening knowledge of movements mechanical it will upset many a pet theory, but that is just what is wanted.

One tire builder does 50 per cent more work than the average workman. Is he naturally rapid, are his tools more conveniently located, or has he but a clever knack? High speed motion picture photography should solve the secret of his deftness so that others may be taught equally swift but sure movements, or perhaps a better way to place their implements.

In standardizing working conditions preparatory to putting a job on piece work, such as a group of men calendering tire fabric, consisting of the calender man, mill man, two back tenders and a wind-up man, slow pictures would show if the men performed their tasks with the least wasted effort and also whether or not the machinery and equipment were located to the best advantage. The same is true in almost every line of rubber manufacture.

Industrial engineers should also find such a camera helpful in carrying out systems of production control. While many have excellent time and rate schedules, too often they make the mistake of setting rates without first trying to improve or standardize working conditions. In calendering tire fabric, for instance, where five men are required, machinery and equipment may not be located for best results, or there may be aimless movements somewhere among the workers. Analyses with such apparatus might readily reveal all such lost motion and suggest many ways for enhancing efficiency in rubber calendering processes.

Boston Shies at Rubber Paving

WHILE communities everywhere are striving to lessen the din and vibration due to heavy traffic and to get as far away as possible from cobblestones and granite blocks, Boston still elects to be classed with backward bailiwicks where "carts yet rattle o'er stony streets." The Metropolitan District Commission has decided that in the overhauling of the Harvard Bridge between Boston and Cambridge the pavement shall not be of rubber blocks, for which so many public spirited citizens had pleaded, but of Belgian blocks grouted with asphalt. Thus the so-called conservatism of a few triumphs over the comfort, welfare, and wishes of a multitude.

A responsible concern, the Wright Rubber Products Co. of Racine, Wisconsin, last spring had entirely at its own expense laid on the much-used Northern Avenue Bridge 250 square feet of improved rubber blocks; and the severest tests had demonstrated not only the quietness and vibration-killing properties of the pavement, but also its remarkable wearing quality. Indeed, when a freight car jumped from rails on the bridge its heavy, sharply-flanged wheels made but a mere impression on the inch-

thick rubber units. Nor is this the only case in which the preeminence of rubber as a material for surfacing roads of easy grade has been proved beyond cavil. The Chicago, Milwaukee & St. Paul Railroad has found it admirable for crossings; and the Boston & Albany Railroad, it is stated, is so well impressed with the trials given by the progressive western road that it will soon replace planking with rubber blocks.

The adamantine ruling of the commission strikes forward-looking Bostonians hard. In published protests they roundly denounce the board's refusal to put rubber pavement on the Hub City's "London Bridge"; and one writer declares that, owing to the semi-cantilever construction of that span and inevitable vibration, the granite blocks cannot fail to loosen in a few years and the noise will be more intolerable than ever.

De Kalb on American Owned Rubber

MANY students of economics wonder why it is that, while other great key industries of the United States obtain the bulk of their raw material within the nation's borders, the colossal American rubber industry still finds itself in the unique and vulnerable position of being entirely dependent upon foreign nations for its basic supplies. Indeed, while others may readily supplement American yields with raw material from neighboring parts of North America, manufacturers of rubber goods are forced to go far afield, even being dependent for the greater part of their supplies on non-American sources on the other side of the globe. True, American rubber manufacturing interests have endeavored in a few cases to overcome this handicap to a degree by setting up in the Far East rubber plantations valued at some $32,000,000. But in the same region Japan has $40,000,000 similarly invested, Holland has $130,000,000, and Great Britain has $489,000,000!

Is there any good reason to hope that America will ever be able to overcome this big disadvantage? Writing in the *Manufacturers' Record*, Courtenay De Kalb does not take a very hopeful view of the situation. We lost our chance thirty-five years ago, he says, when Americans absolutely controlled the world's supply of rubber. Then we could have obtained any concession we might have desired for plantations in the Amazon Valley, but, says he, we chose to let the future take care of itself and now we are paying the penalty. The far-sighted British, however, not only saved themselves in the historic debacle in the wild rubber market but were soon able to enter the field with cultivated rubber; and their world dominance is now only too obvious.

Mr. De Kalb tells of vainly trying to arouse torpid Americans to a realization of their plight, and of futilely endeavoring to interest Washington in a Floridian Hevea planting experiment; and he tells, too, how for thirty years the Editor of THE INDIA RUBBER WORLD has been appealing to Americans, otherwise so enterprising, to devise means for producing rubber for their own protection, and to exhibit something of the prevision of the British, who, not willing to put their sole dependence on the Southern States for cotton, planted that staple in Egypt, India, Sudan, Nigeria, Queensland, and conducted investigations in other countries.

However, Mr. De Kalb does not wholly despair of American rubber cultivation. Something, he hopes, may come of the newest (Ford) effort to grow latex-bearing trees in the Everglades, as, he says, the *Ficus elastica*, at least, can flourish in Florida; and the possibilities of rubber-bearing shrubs in the semi-arid Southwest have not been exhausted; so, too, the Hoover Commission may make some excellent suggestions. But so long as Far East rubber is raised with the cheapest labor in the world, he wisely remarks, American production is economically impossible; unless, however, it be fostered with a generous meed of tariff protection.

Crash Shows Plywood's Value

AFTER having made thirty-five trial flights safety, a Los Angeles inventor staged a public demonstration of his novel airplane, taking with him his wife, child, and a pilot. Seven minutes after the machine went into the air, and while it was making 140 miles an hour, a cable snapped and the plane crashed to earth, killing the four occupants. Distressing as was the disaster, it oddly enough demonstrated, as no engineering test might, the remarkable staunchness of plywood used for the plane's fuselage. The material was a double layer of basket-woven "fabric," composed of very narrow, superimposed, corrugated strips of thin, tough wood joined with a casein cement under heavy pressure, and having a weight of but nine ounces to the square yard.

In striking the earth in a fall of 200 feet the heavy engine, as might be expected, broke through the plywood in the bulkhead, yet the remainder of the fuselage was left quite intact, the material showing practically no evidence of the great stress to which it had been subjected, but rather indicating extraordinary strength, rigidity, and resilience.

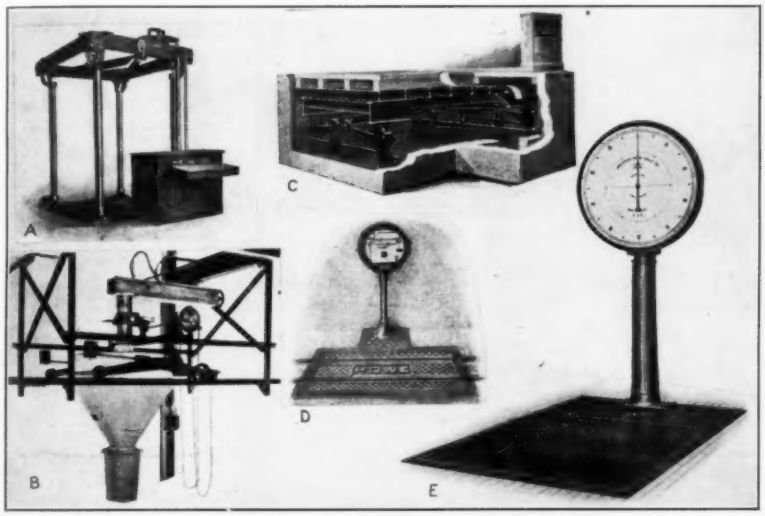
It is interesting to conjecture what might have been the outcome had the plywood been made, not with waterproof glue, as in this case, but with the layers cemented together with rubber and vulcanized, a process employed in constructing a new rubber and wood disk wheel. Possibly were it of some such make it might have provided more elastic resistance in the well-weighted body and in some measure mitigated the severity of the fatal mishap. At any rate, the experience suggests that much more experimenting might be done with advantage to users and producers of such material. The possibilities of rubber plywood are many.

"A MERRY HEART DOETH GOOD LIKE A MEDICINE; BUT a broken spirit drieth the bones." Proverbs, 17:22.

Weighing Apparatus Used in the Rubber Industry

Standard Industrial Scales—Laboratory, Compound and Millroom Scales—Weighing Calendered Fabrics—Tire Scales—Coal Weighing Equipment

CONTROL of quality, waste, and output in the rubber industry is governed by the use of weighing apparatus the types of which vary from the finest laboratory balance to the mammoth weightometers used in weighing coal. In addition to standard types of scales, special weighing apparatus has been developed for the various uses peculiar to rubber manufacturing.



(A) BOSTON AUTOMATIC ELECTRIC SCALE (B) W & P TRAVELING COMPOUND SCALE (C) BUFFALO SUSPENSION BEARING TRACK SCALE (D) HOWE INDUSTRIAL RAILWAY SCALE (E) KRON DORMANT PLATFORM SCALE

Standard Types of Industrial Scales

Since the war there has been a marked development in automatic scales which have replaced the beam type on account of their speed and accuracy. This does not mean that the old type of beam scale has been entirely replaced, however, as there are many conditions and situations where it is still used to good advantage. Accuracy and minimum of upkeep are vital factors in the consideration of weighing apparatus, and both are dependent upon regular and systematic inspection and cleaning of scales. When these things are neglected the cost of upkeep increases.

Scales for Raw Materials and Finished Products

The receiving and shipping of raw material and finished product calls for various kinds of standard weighing apparatus. In the receiving department it is advisable to have a platform scale built into the floor, located at the entrance where the bales, boxes, and bags are received so that weighing takes place as the goods pass through without rehandling or extra trucking. Types of scales used for this purpose are the industrial scale made in beam and automatic type, the electrically operated scale, the railroad track scale, and the built-in platform scale. These scales are equipped with tare beams which allow the weigher to deduct the weight of the truck, container, or car so that the dial records the net weight. Occasionally materials may be received on an overhead conveyor or monorail, in which case the overhead track type is typical equipment.

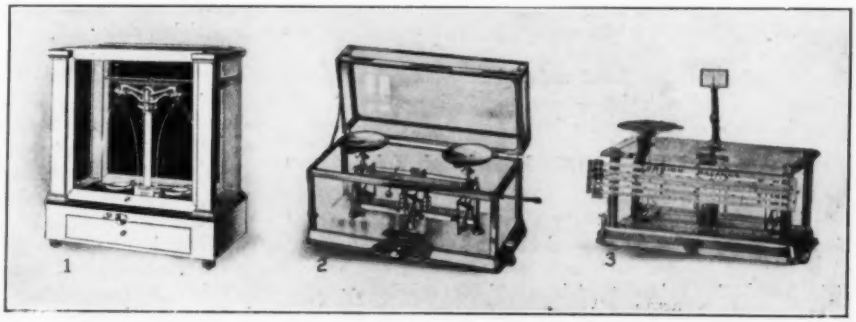
In the shipping department it is necessary to have platform and built-in scales for weighing up to 2000 pounds capacity bulk shipments and smaller scales for weighing parcel post and express shipments, with a maximum capacity of 100 pounds.

Laboratory Weighing Instruments

The chemical laboratory where the raw materials are tested and inspected requires sets of balances of precision. The cotton cloth calculating balance which ascertains the number of yards per pound of fabric of any width without calculation or use of weights, a laboratory and roving scale with sensitiveness of .015 gram for use in determining ash and acetone content of compounds and other experimental results, and precision balances find general use in rubber laboratories. Moisture content and specific gravity are computed by means of special balances for these purposes. These results are necessary in testing reclaims, wild rubbers, tire fabrics, woolens and fleeces, and other materials where bought on a pound basis. Moisture content is important, as an excess of it causes blistering and imperfect results in vulcanization.

Compound and Millroom Scales

The compound, mill, and calendering departments require a wide variety of scales as practically all the materials handled in these departments are figured on a poundage basis, rubber, chemicals, or drugs, reclaims, and cloth. The weighing out of a batch of compound requires the most accurate and reliable weighing apparatus that can be obtained, as incorrect putting up of formulas, undetected before the compound is mixed, renders



(1) BECKER ANALYTICAL BALANCE (2) TORSION CHEMICAL BALANCE (3) TORSION YARN CALCULATING BALANCE

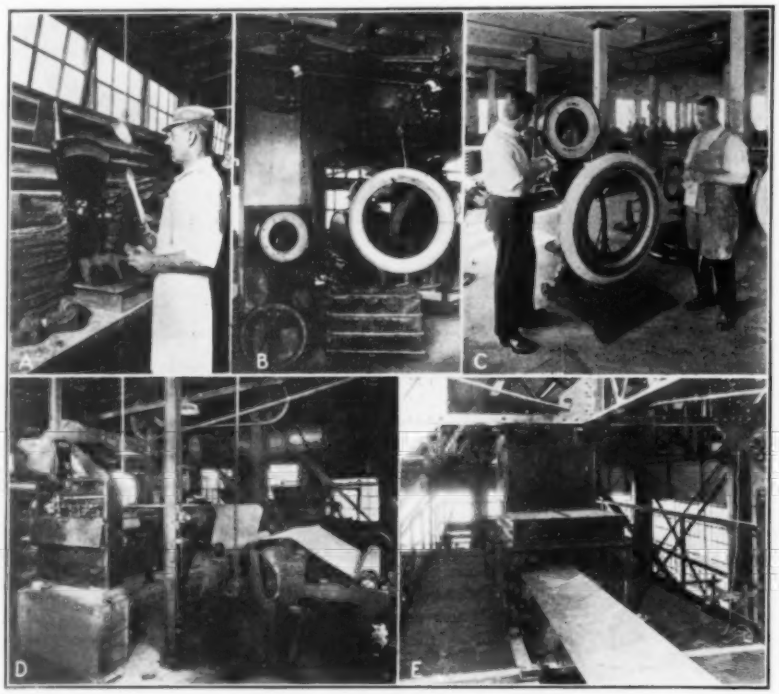
Precision Scales for Use in Laboratories

finished goods unfit to perform the service for which they were intended.

General procedure in the compound room is to weigh out the compounding ingredients such as whiting, litharge, zinc, lithopone, and barytes from hopper bins, which are filled by means of overhead chutes. To weigh out properly with this up-to-date compound equipment, it is necessary to have a scale running on a track which by means of a tare beam allows for the weight of the pan. The weigher then passes from bin to bin measuring out the amount of each ingredient into the pan. Dial automatic scales are used, equipped with a series of pointers which can be set at the proper amounts for each kind of chemical, thus eliminating mental calculation on the part of the operator, increasing the speed of operation and reducing the liability of error. When it is necessary to protect a secret formula the scale is furnished with a blank dial, test weights to the required amount are placed on the platform, and the pointers are set to the correct positions. The weighman simply loads the scale with the various materials until the indicator coincides with the corresponding pointers.

The pan of compound then passes to the next weigher for adding oils and resins, which require a special scale of smaller units. Crude rubber and reclaim are weighed out separately, the operator cutting off slabs until the right amount shows on the dial. Sulphur and accelerators, which are of especial importance in the compound, are weighed out on a small sensitive scale and put in a separate pan for rechecking. The completed compound is then weighed on a larger scale to check with the unit of measure, 100 or 60 pounds as the case may be, and the batch is ready for the mixer. Most factories make it a practice to recheck the batch before mixing for total-weight and use a balance scale to check the sulphur and accelerator.

Special scales that are listed under flour handling equipment combine sifting and weighing in one operation and are suitable for use in handling compounding ingredients.



(A) TOLEDO CRUDE RUBBER SCALE (B) TOLEDO OVERHEAD TRACK TIRE WEIGHING SCALE (C) TOLEDO TIRE WEIGHT CHECKING SCALE (D) TOLEDO CONTINUOUS FABRIC WEIGHING SCALE (E) MERRIMAC AUTOMATIC COAL WEIGHING SCALE

Types of Special Scales Used in the Rubber Industry

Automatic Weighing of Calendered Fabric

Scales are used at the calenders which friction and coat fabrics to determine how much gum is put on a lineal unit of fabric. This is ordinarily determined by weighing the roll before calendering, reweighing it after each coat and computing the running weight, so-called. This method is not highly satisfactory, as in case the calender man is running the coat too light or too heavy the fact is not determined until the roll is finished. Gaging is unsatisfactory on coating because it is necessary to cut out a piece of the fabric to obtain it, and on frictioning, it is not an accurate method of determining the running weight. To meet this condition scale manufacturers have brought out a scale known as the continuous weighing scale, which gives a continuous indication of the weight of a lineal unit of sheet material, while in process, to permit the operator to adjust his rolls accordingly. The travel of the scale lever is limited by adjustable stops which are so made as to constitute electric contacts. These may be connected into circuits of signal lamps of different colors so as to indicate that the lever has reached the limit of its travel and that therefore the material is heavier or lighter than the desired standard by more than the tolerance permitted in the specifications.

These signal lights may be placed at distant points, such as the superintendent's office, and he will then be able to judge of the attention which the operator is giving to the adjustment of his machine by the frequency and length of time over which the signal lights are lighted.

Special Tire Weighing Devices

Scales of various types have their uses in preparatory and finishing departments in all factories where rubber goods are processed. In building tires it is of the utmost importance that the correct amount of tread stock be put on the tire, otherwise trouble will develop in curing. There are several scales on the market for weighing tire treads. The amount of carcass trim is also closely watched in the building room as it is an index of the quality of the tire as well as a big factor in material waste control. Overhead trolley systems are in vogue in all up-to-date factories, and special scales are used which operate with this type of equipment. The weighing of waste and scrap and cut parts is done extensively in rubber footwear cutting rooms, where various standard types of scales are used. Weight is also a factor in determining costs and quality in the finished tire.

Automatic Coal Scales

Weighing of conveyor operated materials is another problem which the scale manufacturers have solved. Coal is a commodity used by rubber manufacturers which can be weighed and checked and received in this manner. One type of coal weigher operates on a conveyor belt. A section of the conveyor belt is supported on a floating platform, hung on compound levers, balanced by an iron float in a cylinder of mercury. The movement of the float is a direct measure of the weight on the conveyor belt.

This enumerates some of the types of weighing apparatus used in the rubber industry. In choosing scales, the plant engineer must first, however, analyze thoroughly his own conditions, which include such factors as class of labor, need of accuracy, plant layout, and other general considerations.

Interlocked and Nailed Rubber Pavement

Effective Attachment Needed to Overcome Traction Wave—Two Practical Suggestions—Interlocking Rubber Blocks

By Elmer Swanson

TWENTY years or more of practical tests with rubber paved roadways in England, and elsewhere, have demonstrated that the problem of permanently attaching rubber blocks to the road surface in a way to withstand the destructive action of the traction wave still remains unsolved. The success of rubber pavement for roadways depends on the discovery of practical and effective attachment of the blocks to the road foundation.

Some plan of nailing the rubber blocks to heavy plank backing embedded in concrete road foundation would seemingly offer a practical solution of the anchorage problem.

Interlocking Blocks and Metal Rails

Two methods of carrying out this suggestion are here illustrated. The first shown in figures A and B make use of iron T rails for interlocking the rows of rubber blocks, which are spiked to the underlying plank foundation. The planks would be bedded diagonally on the road foundation and surfaced over with a coating of rubber cement for exclusion of water from the wood, and also for attachment of the rubber blocks and wood base.

The function of the T rails is to interlock with the blocks and offer a means through which to spike the blocks to the planking after the manner of attaching a rubber heel to the sole of a shoe by nailing it on through an embedded washer. This is clearly shown in B which represents a cross-sectional view of a spiked block.

The blocks would be molded on each lengthwise lower edge to conform to the profile of the T rail. Their top edges would thus meet over the center line of the top flange of the T. The pavement and interlocking metal strips would be spiked through into the plank base as indicated in both figures A and B.

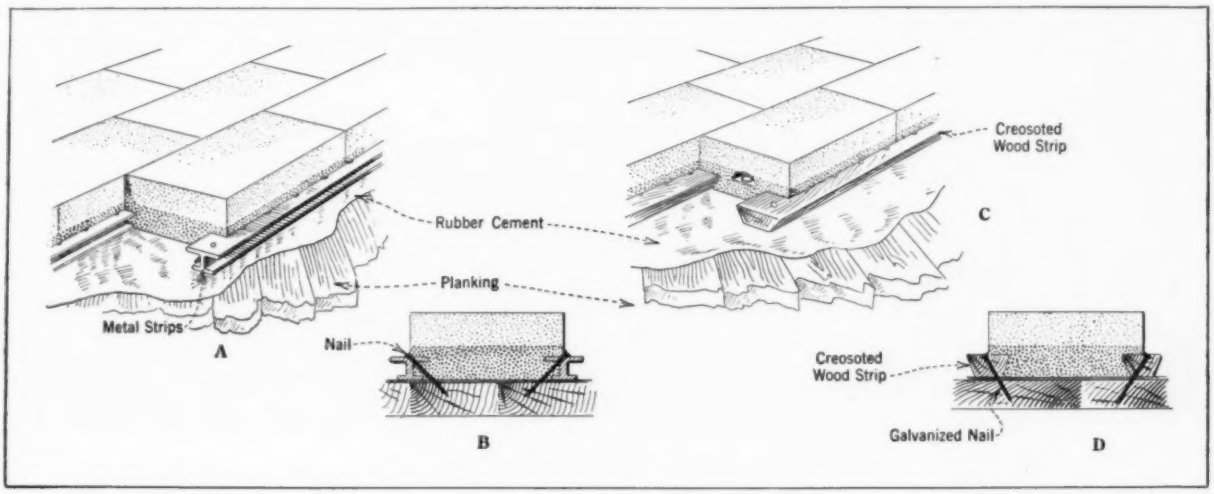
Interlocking Blocks and Wood Strips

A second means of interlocking rubber paving blocks and spiking to underlying planking is illustrated in figures C and D. In this case the paving block is molded to show a dovetail base in cross-section which interlocks with a corresponding wooden strip spiked to place, as indicated in D. A recess is molded in each end of every block to facilitate nailing lengthwise. The dovetailed interlocking strips should be preserved by creosoting, and by either plan the nailing should be done with galvanized spikes.

Advantages of Suggestions

The advantages of the suggested plan for nailing down interlocked rubber paving block would be the increased resistance they would offer against dislodgement under the traction of heavy traffic which would be especially noticeable on a grade.

The need for rubber pavement is important, particularly in all cities where zones of quiet are desirable, as in the vicinity of hospitals, schools, churches, etc. It is also practical for indoor and outdoor tennis courts, basketball and handball courts, indoor gymnasium tracks, floors of stables, cages in zoological gardens, etc.



(A) Rubber Block Interlocking with Metal Strip Nailed to Plank Foundation. (B) Cross Section. (C) Rubber Block Interlocking with Wood Strip Nailed to Plank Foundation. (D) Cross Section.

LINCOLN HIGHWAY DEVELOPMENTS

On June 16 J. Newton Gunn, president of the Lincoln Highway Association, acted as the "official starter" at a coast to coast automobile expedition which began at Times Square, New York, N. Y., and was to end in San Francisco on August 1. The driver was Frank Kulick, a member of the Ford Motor Co.'s research staff, while the vehicle to be used on the journey was the ten millionth car constructed by that company, both sides of the automobile carrying the legend "New York to San Francisco via the Lincoln Highway."

For the use of motorists the Lincoln Highway Association has prepared an elaborate guidebook, with many maps, while a smaller set of seventeen strip maps, mounted on cardboard, is selling for fifty cents. Both publications indicate the steady development of this famous road.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

(455) Inquiry is made as to source of supply of Glugloss gelatine and Dextrose.

(456) A correspondent desires to get in touch with manufacturers of ink for printing on rubber toy balloons.

(457) Addresses are requested of manufacturers of cushion tires.

(458) We are asked to supply names and addresses of firms marketing sponge rubber.

(459) Newly incorporated company desires to get in touch with a firm who could furnish rubber casings for truss pads.

(460) We are asked to supply addresses of firms from whom unvulcanized hard rubber compound may be obtained.

(461) Correspondent desires address of manufacturer who could supply large quantities of washers of rubber, leather or other material.

(462) We are asked for a list of manufacturers of rubber novelties.

(463) A list of firms is requested who could supply rubber for cementing leather to rubber.

(464) Request is made for a list of manufacturers of rubber boot repairing machinery.

(465) Inquiry is made for names of manufacturers of molds for making automobile mats.

(466) From Germany comes a request for information as to source of supply of chicle and chewing gum machinery.

(467) We are asked to furnish address of a manufacturer of a steam tube splicing apparatus.

Foreign Trade Opportunities

Addresses and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th street, New York, N. Y. Requests for each address should be on a separate sheet and state number.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
11,073	South Africa—Batteries in rubber-cased boxes	Purchase
11,134	Australia—Balloons and other rubber novelties	Agency
11,154	Greece—Automobile tires	Agency
11,160	Mexico—Balloons and other rubber novelties	Purchase
11,163	Belgium—Tennis balls, rubber sundries and specialties, soles and heels, waterproof garments, and gas tubing	Agency
11,170	South Africa—Tennis balls	Purchase and agency
11,276	England—Druggists' rubber sundries	Purchase
11,281	Cuba—Rubber goods	Agency
11,286	Egypt—Automobile tires and tubes	Agency
11,299	Norway—Rubber boots	Purchase

DURING MAY MEXICO OUTSTRIPPED OTHER COUNTRIES IN IMPORTATIONS of American mechanical rubber goods, her purchases of rubber belting being valued at $41,257; hose, $21,740; and packing, $9,154. Chile followed, with belting at $35,642; hose, $10,388; and packing, $2,214. British South Africa's purchases included belting, $23,724; hose, $16,670; and packing, $2,769; while England was represented with belting, $10,378; hose, $20,824; and packing, $2,480.

DURING THE FIRST SIX MONTHS OF 1924 THE UNITED STATES imported 157,623 pounds of hard rubber goods, valued at $192,372. The principal sources of supply were: Austria, sending 87,142 pounds, value $98,781; and Germany, 64,290 pounds, value $86,313. Other sources included England, Poland and Danzig, Belgium, Canada and China. February's shipment represented the largest importation, at 36,557 pounds, value $41,221.

FOREIGN RUBBER TRADE INFORMATION

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

NUMBER	SPECIAL CIRCULAR
550	"Trade in Water Bottles and Syringes in Vienna, Austria," etc., etc.
*551	"Trade in Water Bottles and Syringes in Switzerland."
*553	"June Imports into the United States of Tires and Tubes."
554	"Tire Market of Nuevitas, Cuba," etc., etc.
555	"Trade in Water Bottles and Syringes in Antwerp, Belgium," etc., etc.
*556	"Inner Tube Prices in Argentina."
557	"Trade in Water Bottles and Syringes in Sofia, Bulgaria," etc., etc.
*559	"Market for Pneumatic Tires in Rumania."
560	"Trade in Water Bottles and Syringes in La Paz, Bolivia," etc., etc.
*563	"Tire Prices in Poland."
*564	"Retail Tire Prices in Switzerland."
*565	"Trade in Water Bottles and Syringes in British South Africa."
*567	"Trade in Water Bottles and Syringes in China."
*568	"Imports of Rubber Tires into British India."
570	"Demand for Toy Balloons in Central Mexico," etc., etc.
*571	"Market for Waste Rubber in Spain."
572	"Tire Imports Heavy in Dutch East Indies," etc., etc.
*574	"Trade in Water Bottles and Syringes in India."
575	"Tire Market of Tegucigalpa, Honduras," etc., etc.
*576	"Retail Tire Prices in British Guiana."
577	"Trade in Water Bottles and Syringes in Singapore, Straits Settlements," etc., etc.
*578	"Retail Tire Prices in British South Africa."
579	"Trade in Water Bottles and Syringes in Alexandria, Egypt," etc., etc.

UNITED STATES IMPORTS OF CRUDE RUBBER, GUTTA PERCHA, ETC.

The United States imported during the first six months of 1924 162,174 long tons of crude rubber, valued at $87,407,750, as compared with 195,669 long tons, value $117,324,206 for the same period in 1923. A decline in both volume and value will be noted.

During the month of June, 1924, the total quantity of crude rubber imported was estimated at 49,566,051 pounds, value $11,133,574; jelutong reached 1,845,982 pounds, value $180,916; and gutta percha 436,147 pounds, value $53,109. Imports of other crude scrap and reclaimed rubber totaled 409,361 pounds, value $30,869; figures for guayule were 296,400 pounds, value $52,052; and balata, 45,933 pounds, value $15,115. Imports of liquid latex were estimated at 566,072 pounds, dry weight, and valued at $120,673.

The leading sources for this June supply were: Straits Settlements, 28,732,642 pounds of crude rubber; 1,566,252 pounds of jelutong; 402,010 pounds, dry weight, of liquid latex; 315,802 pounds of gutta percha; and 99,680 pounds of other crude scrap and reclaimed rubber. England followed, with 7,080,647 pounds of crude rubber; 3,455 pounds of balata; 830 pounds of gutta percha; and 24,724 pounds of other crude scrap and reclaimed rubber. Java and Madura sent 4,870,741 pounds of crude rubber, 279,730 pounds of jelutong, 119,515 pounds of gutta percha, and 84,070 pounds of other scrap and reclaimed rubber, while imports from other Dutch East Indies included 2,592,278 pounds of crude rubber and 164,062 pounds of liquid latex, dry weight.

Other important shipments were represented by 2,571,481 pounds of crude rubber from Ceylon; 2,248,195 pounds of crude rubber from Brazil, and also 5,656 pounds of balata; and 1,345,920 pounds of crude rubber from British India.

HOLLAND'S IMPORTATIONS OF RUBBER-INSULATED COPPER WIRE or cable totaled in 1922, 1,196,000 florins, the figure for 1923 rising to 1,230,000 florins. During these two years the importations from Germany of such goods showed a decline of 242,000 florins from 1,017,000 in 1922 to 775,000 in 1923. During the first quarter of 1924 the importations from all sources continued to increase, the figure being 402,000 florins, as compared with 283,000 florins for the corresponding three months of 1923. (Florin or guilder equals about 1s. 8d.).

Water Dispersion in Rubber Manufacturing

Picture of Dispersive Effect—Applications of Process—Glue and Colloidal Clay—Future Possibilities

SINCE the publication in this journal of a series of articles[1] on water dispersion of rubber, balata and gutta percha, this process has been reduced to practical applications in a number of industrial lines. The economical and technical importance of water dispersions is constantly becoming more evident as their study and development proceed. In fact, water dispersion may eventually supersede the use of solvents for many technical purposes and become an industrial factor of exceeding importance.

Water Dispersion Pictured

What takes place when a mass of rubber is dispersed in water is indicated by picturing the conditions as follows: Crude rubber may be considered to consist of massed minute shrunken globules with shriveled exteriors, interlocked and cemented together by non-rubber substances. It is comparable, by way of illustration, with a mass of dried prunes. As in the case of the latter, the rubber globules can be pulled apart, separated and dispersed under conditions which allow the entrance of water to swell the rubber globules and break the cohesive or binding force of the cementing non-rubber materials.

Absorption of water is effected by means of a suitable water carrier mixed with the rubber. Glue or colloidal clay functions effectively to convey the water into rubber and disperse the rubber globules under suitable mechanical treatment. This treatment consists of working the rubber by mechanical pulling which permits the wet glue or clay to penetrate and loosen the grip of the massed rubber globules.

Typical Rubber Dispersion

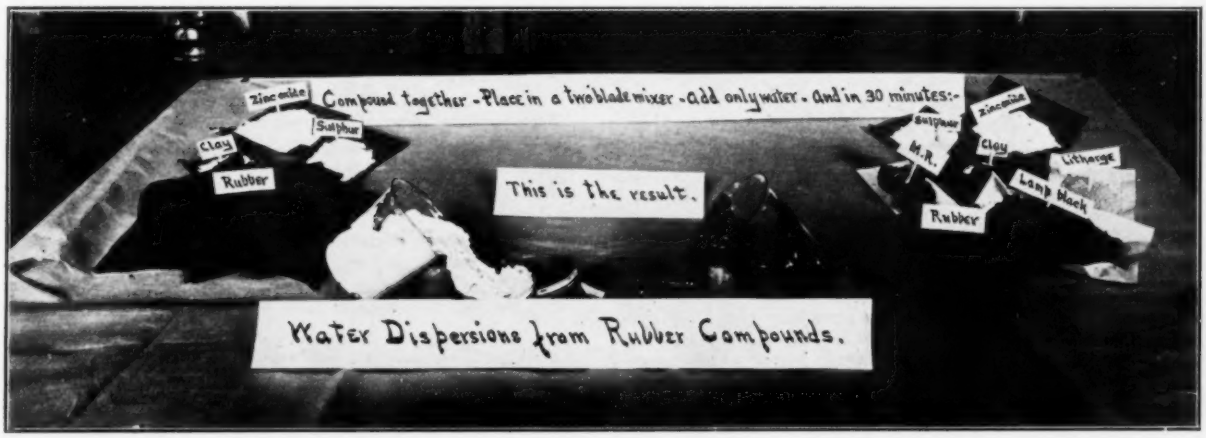
Very many successful water dispersions have been made experimentally of pure rubber and rubber compositions containing the usual compounding ingredients, substitutes, hydrocarbons, softeners and fillers in great variety. Also a beginning has been made in actually applying water dispersions in the manufacture of certain lines of rubber goods. Naturally the use of rubber dispersions on the spreading machine was first attempted. The preparation and use of water dispersed rubber mixings is now in daily routine factory practice for certain proofed fabrics and surface coating of adhesive tape. In the latter instance glue is incorporated with rubber and reclaim in the mixing.

The accompanying illustration pictures on one side the individual ingredients of a white rubber composition and on the other side those of a black rubber composition. In the foreground may be seen the same white and black rubber mixings, water dispersed and flowing from beakers.

In certain eastern rubber factories water dispersions of rubber are being made and used in routine manufacturing procedures described in the following details.

Rubber Glue Dispersion

The warm batch is milled with a little water in an enclosed mixer of the familiar horizontal type with two revolving blades,



Left—Materials for White Compound and Dispersed Rubber Flowing from Beaker. Right — Materials for Black Compound and Dispersed Rubber Flowing from Beaker

the action of which does not masticate the rubber but subjects it to a pulling or stretching effect. This process is continued for a brief period until the warm rubber shows indications of shortness as distinguished from toughness. At this point definite additions of warm water and soap bark extract are made, continued at frequent intervals as the liquid enters the rubber. The function of the soap bark extract is to break the surface tension of the water and facilitate its absorption by the rubber. After a short mixing the rubber assumes a soft, putty-like consistency. Further mixing and the addition of more water rapidly reduces the dispersion to a smooth cream containing about 40 per cent of water and 60 per cent of rubber composition. A dispersion of this sort is made in about 30 minutes and can be thinned subsequently with water to any desired concentration.

Rubber Clay Dispersions

Naturally, water dispersions made by use of glue and soap bark have their technical limitations. While applicable to tape surfacing, cheap proofing, etc., they evidently are not suitable as frictions for belting or tires. In dispersions intended for friction purposes colloidal clay is substituted for glue and soap bark. The proportion of clay used is regulated according to the rubber

[1] THE INDIA RUBBER WORLD, January 1, 1923, 213-15. February 1, 1923, 291-3. May 1, 1923, 488-90. January 1, 1924, 219-20.

content of the batch. Excess of clay over the amount needed is avoided since the only function of the clay is to lead the water into the rubber batch. The amount of clay for dispersion of a given stock is determined experimentally according to the special conditions encountered. Its proportion may vary up to 10 or 12 per cent on the rubber present. Clay is equally as effective as glue in water dispersions and soap bark is not required with it. Not every clay is adapted to the work, thus far only the colloidal variety known as Bentonite has been found suitable. Water dispersions are made with equal facility using either glue and soap bark or clay. In either case, when the details are reduced by experiment to a routine, the process can be conducted successfully by unskilled labor.

Other Applications

Manufacturing possibilities of water dispersions of rubber are evident in leather shoe work now using 100 or more solvent containing rubber cements for which water dispersions may be substituted. In the paint manufacturing industry water dispersions have already shown startling results experimentally, eliminating turpentine.

Water has been called the universal solvent and it would seem to be no less universal as a dispersing medium. The development of this process will be followed with interest in many industries.

MANUFACTURED WEATHER IN RUBBER FACTORIES

Industrial air conditioning or the service of manufactured weather conditions has an assured position in the industrial world. It allows manufacturing routine independent of out-door weather variations, and is a means toward standardizing product, increasing its output and decreasing its cost. It is of value wherever heat, humidity, air distribution and circulation are factors in industrial processes.

There are several departments in rubber factories where advantages may be derived from the application of air conditioning. The following are typical examples in this connection.

Drying washed crude rubber under properly controlled conditions of humidity, temperature and air circulation results in a rapid and uniform drying schedule and a product of high quality.

Where cementing is done, evaporation of the solvent so lowers the temperature of the rubber surfaces that condensation will occur under certain atmospheric conditions. This either weakens the joint or causes blisters in the goods when vulcanized. In the dipping room moisture condensation occurs, particularly in the summer, causing blisters and non-uniform results. These difficulties can be entirely eliminated by properly conditioning the air and, in the dipping room, rapid and uniform drying between dips is made possible.

In drying fabrics processed with aqueous dispersions of rubber the newest development of rubber technology, uniformly dried product and uniform drying schedule can be made possible by controlled drying conditions of humidity, temperature and air circulation.

PORTO RICO BOUGHT FROM THE UNITED STATES DURING JUNE, 1924, 4,481 automobile casings, value $62,230; 4,912 inner tubes, value $12,905; and 644 other tires, value $2,256. Totals for the six months' period ended June 30, 1924, were 25,101 automobile casings, value $346,665; 24,639 inner tubes, value $51,233; and 2,307 other tires, value $6,999.

THE MAY EXPORTS FROM THE UNITED STATES OF WATERPROOFED clothing had a value more than three times that of the corresponding January shipment. The figures for the first five months of 1924 are as follows: January, $42,700; February, $59,748; March, $119,760; April, $96,753; and May, $138,618.

U. S. EXPERTS TEST BRAKES AS BASIS FOR SAFETY CODE

Automotive engineers connected with the U. S. Bureau of Standards recently tested the brakes of automobiles, picked at random in Washington, D. C., to obtain data which will be used as the foundation for a uniform national code regulating braking requirements. The results of the examinations of the control apparatus of the motor vehicles will be sent to the annual congress of the National Safety Council, which will be held at Louisville, Kentucky, in September, and to the joint conference on street and highway safety, called by Herbert Hoover, Secretary of Commerce, which will be held at Washington, D. C., in November.

Among the organizations interested in this movement to reduce the number of automobile accidents are the National Safety Council, American Automobile Association, National Automobile Chamber of Commerce, American Federated Engineering Society, U. S. Chamber of Commerce, Society of Automotive Engineers, Asbestos Brake Lining Association, and the National Bureau of Casualty and Surety Underwriters.

Following is the summary of brake tests made by U. S. Bureau of Standards at Washington, D. C.

SERVICE (FOOT) BRAKES—DRY ASPHALT

Poor	Fair	Good	Excellent
50 ft. or over	40 to 50 ft.	30 to 40 ft.	30 ft. or under
Total 32	Total 43	Total 79	Total 27
Ave. 58.05 ft.	Ave. 42.8 ft.	Ave. 32.6 ft.	Ave. 27.36 ft.
18%	23%	44%	15%

General average for all service brakes, 45.4 (fair). Total number of runs, 176. Best stop 17 feet. Poorest stop 80 feet.

4-WHEEL BRAKES (SERVICE) DRY ASPHALT

Total number of tests, 12; 6.82 per cent. General average, 24.5 feet.

SERVICE BRAKES—WET ASPHALT

Poor	Fair	Good	Excellent
50 ft. or over	40 to 50 ft.	30 to 40 ft.	30 ft. or under
Total 1	None	None	None
Ave. 62.6	Ave. 43	None	None

HAND BRAKES—DRY ASPHALT

50 ft. or more to stop	40 to 50 ft.	30 to 40 ft.	Under 30 ft.
Total 107	Total 17	Total 19	Total 8
Ave. 90.0 ft.	Ave. 42.6 ft.	Ave. 36.2 ft.	Ave. 29.4 ft.
70.8%	11.25%	12.6%	5.3%

Best stop, 25 feet. Poorest stop, 200 feet. 32 stops 100 feet or more, 21.2 per cent; average, 137.6 feet. General average for all hand brakes, 74.9 feet. 3 stops 200 feet or more, 2 per cent; average, 200 feet.

HAND BRAKES—WET ASPHALT

Poor	Fair	Good	Excellent
50 ft. or over	40 to 50 ft.	30 to 40 ft.	30 ft. or under
Total 5	None	None	None
Ave. 150 feet			
100%			

All readings are in feet to stop from 20 miles per hour.

INCREASE IN CANADA'S RUBBER INDUSTRY

The great increase in Canada's rubber industry in recent years is indicated in figures compiled by *Commerce Reports*. Canada's total imports of rubber and rubber goods were valued in 1922 at $7,658,852, the figure rising in 1923 to $13,216,371. Of these imports the totals for crude rubber were estimated at $3,548,273 for 1922, and $8,713,209 for 1923. Imports of pneumatic tires during 1922 were valued at $1,165,459, the 1923 figures being $1,023,639.

Total exports of Canadian rubber goods in 1922 were estimated at $6,314,370, increasing in 1923 to $8,829,068. Of these exports boots and shoes were valued at $1,209,209 in 1922, and $1,744,341 in 1923. Pneumatic tire exports rose from $4,330,556 in 1922 to $6,211,713 in 1923.

DURING THE MONTH OF JUNE, 1924, HAWAII IMPORTED FROM THE United States 5,791 automobile casings, value $89,420; 5,314 inner tubes, value $11,695; and 250 other tires, value $502. For the six months' period ended June 30, 1924, the totals were: 36,128 automobile casings, value $538,592; 36,106 inner tubes, value $75,340; and 2,794 other tires, value $9,099.

The Manufacture of Light Rubber Shoes

Shoe Compounds—Calendering Upper and Sole Stock—Preparing and Cutting the Various Parts—Making the Shoe—Finishing and Inspection

ONE of the most staple units in the rubber footwear line is the light rubber or gum shoe. While in a degree dependent upon snow and slushy weather for increased volume, there is nevertheless a steady demand for this product the year round in every clime visited by rainfall, which means the whole world.

In matters of style and lasts the manufacturer must follow the leather shoe trade closely, as to make his line complete he must manufacture a rubber to fit every width and toe on the market. This fact makes the initial expense for lasts, patterns, and dies very heavy, but it is repaid by the steady volume of business.

Shoe Stock Compounds

The preparation of the materials proceeds along the same lines as practically all rubber manufacturing. Five compounds are necessary for running the stocks. The sole compound, which must be the most wear-resisting, usually comprises about 30 per cent of good grade smoked sheet, 10 per cent shoe reclaimed, litharge to accelerate the cure, whiting as a filler, sulphur and either lampblack or red oxide for color. It is essential that the mixture be well milled to prevent porosity.

The upper is subjected to a different sort of strain and is very soft and sticky in the unvulcanized state. Most compounds contain at least 40 per cent rubber, usually a blend of plantation and South American Pará, no reclaimed in the best grades, English cliffstone or whiting finely screened for filler, lampblack for color, and sulphur and litharge for curing agents. It is absolutely essential that the upper compound should age well and resist cracking in the instep, where it gets the greatest flexing strain.

The three other compounds are used in the interior parts of the shoe as fillers and binders. The friction is a soft, easily milled compound, consisting of smoked sheet, roll brown, reclaimed, and some softening agent such as resin, pine tar, or MR. The lining coat is similar in nature but not as sticky. The rag compound, used as insoling and reinforcing parts, consists of ground unvulcanized trimmings and scrap, a small percentage of rubber, plenty of reclaimed, and the usual fillers.

Calendering Uppers and Soling

Sheets of uppers and soling are run on calenders specially constructed for the purpose, with interchangeable rolls for imprinting the corrugations of the outsole and the bind of the upper. Linings of stockinette cotton dyed various colors are calender coated and plied up for cutting. Sheetings of various weights from 7.00 yard to 3.00 yard are frictioned both sides and wound in liners. Insoling is made by coating sheetings with rag about ⅛-inch thick, whereas the reinforcing parts are run from rag without cloth backing and wound in liners.

Cutting Uppers, Outsoles and Inside Parts

The uppers are cut out one at a time by hand with a knife ground down about 1½ inches, but only ½-inch is kept sharp. The stock is placed in front of the cutter's bench on frames. The top of the cutter's table is a zinc plate set at an angle of about 40 degrees, with a roller on the outside edge over which he pulls the sheets of stock for cutting. The cutters use what is known as the front hand stroke, which consists of holding the knife between the thumb and index finger, starting at the left side of the binding edge and finishing at the bottom right hand corner with a sweeping stroke. The second stroke cuts out the inside line of the upper next to the bind, and the parts are booked to be sent to the maker. The scrap is returned to the mill department and worked back into new batches.

Outsoles are cut by both machine and hand method. They are cut with a bevel or skive and must therefore be cut one at a time. In the machine method the operator centers the trade mark on the shank of the sole by means of a "finder" on the beveled pattern, presses a foot pedal which propels the knife round the pattern and cuts the sole. The cut soles are then picked out and booked. The outsole hand cutter uses the "back hand" stroke, which calls for a great deal of strength in the wrist. The knife must be gripped firmly in order to cut the soles at the proper angle or skive, with the thumb on top of the handle and the first knuckle joints toward the operator. The first stroke begins on the opposite side of the pattern and is made away from the cutter. This stroke is made round the toe to the shank on the right side when another stroke is started at the left shank and completed round the heel. The cutting plate is made of zinc, the same as used in print upper cutting.

The inside pieces of the shoe, consisting of insole, lining, junior, cloth heel, heel piece, filler, rough back, and toe cap, are cut out by die on beam presses and clicking machines, the stock being plied up from 20 to 40 thicknesses. These parts are then counted out into sets and sent to the preparation room.

Preparation of Shoe Parts

Preparing the pieces for making consists of cementing with rubber cement. Machines process the insoles and rag parts whereas linings and rough backs are cemented round the edges by means of a hand scoop. Friction parts, which are cut with separator paper between the plies, are separated to facilitate handling. Piping or joining strip, which is frictioned tape, is cut on a bias cutter and goes direct to the maker in books.

Making the Shoe

The first operation in making, as performed by the laster, is to join the lining at the back, or if the shoe is a men's self-acting type (with smooth inside at the heel to facilitate putting on and off), to fasten the lining to the rough back. The last is then taken, with the toe up and bottom facing away from the maker, the insole placed, and the lining drawn over the last and stuck to it at the toe, sides and heel. Care must be taken to avoid bunches and lumps at the toe and heel. The duck heel piece and half-shank, used only in men's shoes, are then placed and rolled with a hand roller; the friction toe cap is centered in position and stretched on evenly. Starting at the instep on the inside of the shoe, the joining strip is placed round the edge of the shoe, reinforcing the union between the lining and insole. It must be put on evenly, without stretching, and following the lines of the last, especially at the instep.

The junior or heel piece is then placed, the point on the center at the back, and rolled. Over this is applied the cloth heel, a frictioned piece. All parts are then rerolled to give a firm union and avoid separation and blistering. A friction filler is placed on the bottom, and the lining is marked with a gage to indicate the height of the gum upper.

For the uppering operation the last is placed on the bench, the upper taken in both hands between thumb and forefingers, centered on the gage mark, and pulled down over the toe, then the sides, and smoothed out to the heel. One side is drawn round the heel, and the back seam line is determined by cutting off the

Principal Operations in the Manufacture of Light Rubber Shoes

surplus gum. The other side is drawn lightly around so that the impression of the location of the seam may be left on the rubber; then it is cut with shears and stitched up the back with a serrated roller. The surplus gum is trimmed off the bottom by drawing a knife lightly round the edge so as not to cut through. The upper is then wiped with a damp cloth to remove dust and dirt, and the shoe is ready for the outsole.

Before the outsole is applied, it must first be cemented and allowed to dry. There are two methods of outsoling, machine and hand, but the machine method merely supplements the use of the hand roller and gives the shoe a firm bottom with its mechanical pressure. The shoe is held in the left hand, facing outward, and the sole is applied with the right, first at the toe then the shank and finally the heel. The beveled edges are then rolled in and reinforced by a serrated roller.

Varnishing

The shoes are then placed in cars and sent to the varnishing room, where they are given a coat of varnish by mechanical means to give them the well-known shiny appearance. The vulcanizing process is performed in enclosed heated chambers where the shoes are subjected to a heat of 250 degrees F. for a period of five to seven hours. They are then sent to the packing room, where the lasts are removed, the surplus lining trimmed off, sizes stamped and inspected.

Inspection and Shipping

The inspection process is standardized so that the operator follows a series of details which cannot fail to detect the imperfect article. The shoes are first mated, right and left, and the size stamping noted. The uppers are then inspected for blisters, sand holes, or streaky varnish, the soles for blisters, pulling away at the edges, crooked trade marks, the back seam to see that it has not been cut through, the shank for looseness, etc. The shoes are then wrapped in tissue, cartoned, packed in cases, and forwarded to the shipping departments.

In following up the quality it is now customary for each maker and inspector to stamp the shoe with his or her number so that individual faults can be traced and corrected. This also has a moral effect, as no one likes to mark work as his own unless it is perfect.

The backward season this winter has retarded the sales and production of overshoes and heavy goods in the rubber footwear line, but the rainy weather has kept up the light rubber demand.

The United States Rubber Industry[1]

The Home Market—Magnitude of the Industry—Crude Rubber Consumption—The Tire Industry—Footwear Manufacture—Rubber Hose and Belting—Heels and Soles—World's Dependence on Rubber

BECAUSE of the vastness of its exceptional home market, the United States leads the world in the manufacture of rubber goods. The country's production of articles of rubber amounts to approximately seven times that of the next largest rubber manufacturing nation.

A Great Home Market

Little artificial stimulation is needed to develop a business of huge proportions for articles as useful as those turned out by the rubber factories in a country of 110,000,000 persons with a standard of living so high that an average of five out of every eight families own a motor vehicle. Moreover, this vast power to buy goods is supplemented by the national tendency of the American to take advantage of every means of adding comfort to his home life and efficiency to his business methods. To this tendency the rubber industry owes no little part of its phenomenal growth, for its products are so many and varied that they have become indispensable to the progress of this wonderful age in which we live.

Rubber manufacture has been on a sound basis in the United States since Goodyear discovered vulcanization, but its greatest growth has occurred during the past quarter century with the development of the motor vehicle and the pneumatic tire. Today it is one of the great industries of America and its factories take rank with the factories of other great industries in their efficiency of method and management. While these factories are located in nearly every state and several cities claim many of them, the United States today has its "rubber city" just as it has a "flour city," a "cotton city," a "steel city" and a "paper city." Akron, Ohio, the "rubber city," owes its remarkable growth to the great concentration of rubber manufacture there during the past fifty years. It now has a population of over 200,000, more than double the figures of ten years ago. About half of the entire rubber production of the United States is credited to Akron.

[1] From "The Rubber Industry in the United States," published in commemoration of the participation by the Rubber Association of America in the Sixth International Exhibition of Rubber, Other Tropical Products and Allied Industries held in conjunction with the Fifth Official Commercial Fair at Brussels, Belgium, April 1 to 16, 1924.

Magnitude of the Industry

Some idea of the immensity of rubber goods manufacture in America may be gleaned from the following facts: At the beginning of the year 1923, the rubber industry of the United States comprised 500 concerns, giving employment to 175,000 persons. It ranked seventeenth in the value of its products among the industries of the United States. Among those that surpass it in the value of products are, in the order of their importance, slaughtering and meat packing, petroleum, automobiles, foundry and machine shop products, steel works and rolling mills, cotton goods, bread and other bakery products, men's clothing, lumber and timber products, boots and shoes.

The wholesale value of the rubber goods manufactured and sold during the year 1923 was $961,000,000, of which only four per cent was for export. This total value may be divided as follows: Tires, $620,000,000; footwear, $145,000,000; other rubber goods, $196,000,000.

The enormous growth of rubber goods manufactured in the United States is shown by the following figures from the census reports, covering the period since rubber was first included in the census returns in 1879:

Year	Number of Factories	Number of Employes	Invested Capital	Value of Products
1879	104	11,789	$8,974,000	$25,310,000
1889	167	20,152	27,125,000	42,854,000
1899	301	36,566	71,169,000	99,881,000
1904	265	43,873	86,808,000	148,015,000
1909	267	49,264	162,144,564	197,395,000
1914	342	74,022	267,671,422	300,994,000
1919	477	158,549	960,070,726	1,138,216,000
1923 (Est.)	500	175,000	.....	961,000,000

Crude Rubber Consumption

The growth of the industry is also shown by the fact that in 1906 the United States consumed 24,113 tons of crude rubber, as against 13,838 tons for Great Britain, the next largest consumer; while in 1923 the United States consumption had increased to 305,000 tons, as against 27,500 tons for Great Britain, or an increased consumption in the United States of 208,000 tons since

1906, while the next largest consumer, Great Britain, increased only 14,000 tons.

It is interesting to note here that the world's production of crude rubber for the year 1917 was 253,925 tons, of which the United States imported 177,089 tons, or 69.9 per cent of the whole production. The next largest consumers were the United Kingdom, with 26,983 tons; France, 18,875 tons; Italy, 5,593 tons; Japan, 3,747 tons; and Canada, 5,846 tons.

Tire Manufacture and Export

It is estimated that 80 per cent of all rubber consumed in the United States goes into automobile tires. During 1923 some 45,000,000 tires were produced in this country, having a wholesale value of $620,000,000.

Tire exports, as in the past, were relatively small. In the calendar year 1922 the total value of all tires exported from the United States was $14,898,412, distributed as follows: Europe, $7,614,159; North America, $4,608,248; South America, $2,863,701; Asia, $1,988,747; Oceania, $1,703,762; Africa, $1,119,795.

These figures indicate how important it is to the rubber industry to have the development of the motor vehicle continue. Last year motor car production in the United States totaled 4,014,000 vehicles valued at $2,510,385,000 wholesale, of which 3,644,000 were passenger cars and 370,000 were trucks. This considerably exceeds the highest previous production in any year, which was 2,659,064 cars in 1922. Only 8 per cent of the motor vehicles manufactured last year were exported.

At such a high rate of production for home consumption it is not surprising that of the approximately 18,100,000 motor vehicles registered throughout the world some 15,300,000 or 83 per cent of the total are in the United States. Of this number 13,500,000 are passenger cars and 1,800,000 are trucks.

The rapid increase in the use of commercial motor vehicles to supersede horse-drawn vehicles is as significant of the tendency of the times as it is encouraging to the rubber industry. Tires for such vehicles are usually much larger than for passenger cars and the consumption of rubber is much heavier. In this field the steady increase in the transportation of passengers by motor bus is especially promising. Last year 51,000 motor buses were in operation; 12,500 country schools were using motor transportation; 107 street railways were using motor buses, and 157 railroads were using motor vehicles on short lines.

Along with the expansion of the automotive industry goes the development of good roads. At the end of last year the improved roads of the country totaled 430,000 miles, out of a total of 2,941,294 miles of highways. During 1922 there was a total governmental expenditure on highways of $742,000,000, of which $334,901,000 was offset by receipts from motor vehicle taxes.

Rubber Heels and Soles

The rubber heel presents the most remarkable instance on record of success that has come to a rubber product after long and persistent effort on the part of those who were convinced of its merit. Rubber heels have been manufactured in this country for many years, but during the past three years have overcome the firm resistance of leather manufacturers and achieved phenomenal success. During 1923 some 200,000,000 pairs of rubber heels were consumed in the United States. It is estimated that close to 80 per cent of all new shoes now go into the market equipped by their makers with rubber heels.

Certain types of sole with rubber as a base are selling in enormous quantities through having demonstrated their ability to outwear two or three pairs of leather soles. The crêpe sole has already achieved a remarkable popularity and gives evidence of acquiring a large vogue. Leading manufacturers of leather shoes are putting out lines carrying crêpe soles, having been practically forced to do so by the demand. For canvas sport shoes, the crêpe sole seems to be the sole of the future. The rules of the United States Lawn Tennis Association recognize it exclusively and most of the great championships here and abroad have been won on crêpe soles.

Rubber Footwear Manufacture

The first considerable demand for rubber goods in the United States after the discovery of vulcanization was for rubber footwear and mechanical goods. Next to tires, rubber boots and shoes have formed the most important branch of the industry. The wearing of light rubbers in bad weather is a general custom in the United States, especially outside a few of the larger cities, and highly developed special lines of rubber and canvas footwear for various classes of workmen and for sports wear are selling in large quantities.

The following census figures show the steady progress made in rubber footwear manufacture: 1879, $9,706,000; 1889, $18,632,000; 1899, $41,090,000; 1904, $70,075,000; 1909, $49,721,000; 1914, $53,822,000; 1919, $116,917,000; 1921, $94,033,000. Preliminary figures for 1923 indicate a total footwear output of $145,000,000.

Rubber Hose and Belting

Mechanical rubber goods embrace a great miscellany of articles, the most important items being rubber hose and belting. Production of these two classes of rubber products in the United States, according to census reports, has shown the following development: 1879, $222,000; 1889, $2,033,000; 1899, $2,093,000; 1904, $5,864,000; 1909, $8,262,000; 1914, $10,594,000; 1919, $15,900,000; 1921, $7,637,000. The estimated total for 1923 is $67,000,000.

The list of varieties of rubber hose has become a long one owing to its application to many widely differing purposes. Belting also occupies an important place in American rubber manufacture. Because of mammoth industrial operations with immense tonnages rubber belts for conveying, elevating and power transmission have a strongly intrenched position.

For rugged service where adverse conditions are likely to appear, the very nature of rubber gives it superiority. Special belts can be produced for any special condition or service, whether it is to run in zero weather or extreme heat, whether in dry atmosphere or damp, and whether subject to the corrosive effects of chemicals or the abrasive effects of ore or rocks.

World's Dependence on Rubber

Perhaps the best estimate of the value of rubber in our daily life might be had if one could visualize a rubberless world. It has been truthfully said that from the day of a man's birth until the day of his death his convenience, comfort, health and efficiency are more dependent upon the products of rubber than upon those of any other single commodity. It has become an absolute necessity in the home and business life of the country, assuring a future of the utmost stability for the American rubber industry.

Something like 30,000 products are now manufactured of rubber, yet broad as its usefulness has become it is apparent that only its most obvious uses have thus far been effected. The most pessimistic must admit that the surface of rubber research has only been scratched. During the past five years, however, greater progress has been made in opening up new fields for development than in the half century preceding. As to extending the uses of rubber the possibilities seem to be almost unlimited, for it has the remarkable faculty of playing an important part in practically all the great inventions and discoveries of modern times.

The future depends upon two things: First, the production of a sufficient supply of the raw material to keep prices within reason, and second, the ingenuity and business acumen of the rubber manufacturers.

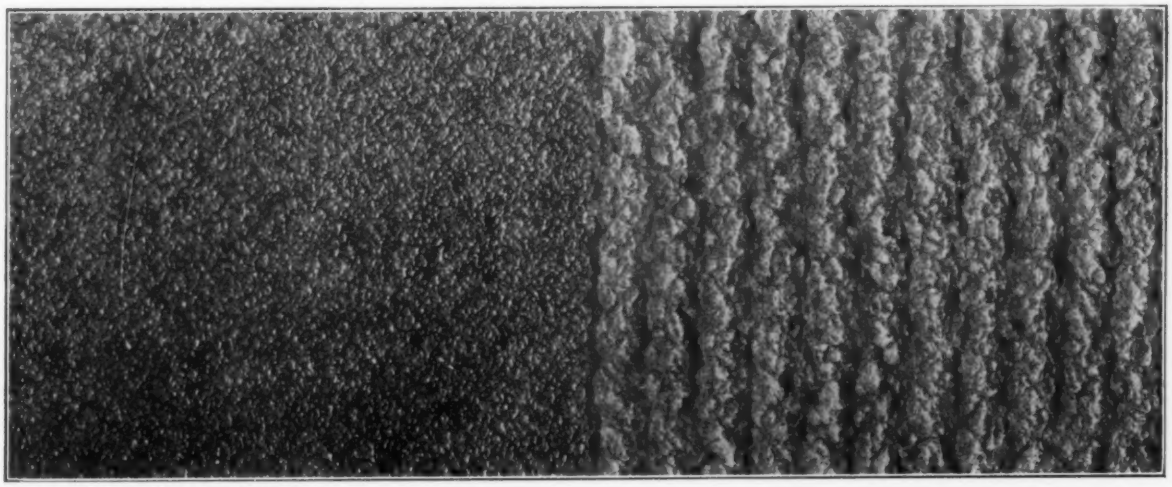
Natural Plantation Finish Crêpe Soling Rubber

Introduction, Development and Possibilities of Plantation Crêpe Soling—Physical Properties—Production Processes—Methods of Attachment—Economy of Plantation Crêpe Soling

DURING the war Ceylon rubber planters experimented with crêpe rubber soling for tennis shoes. The possibilities of this soling for both sport and ordinary wear were so apparent that the planters at once began the development of a special type of crêpe soling which possessed the characteristic qualities of resilience and durability in the utmost degree.

Two years ago natural plantation finished crêpe soling rubber as a special product was introduced to manufacturers of English sport shoes. Practical tests proved the characteristically tenacious grip, responsiveness in action, lightness and resilient flexibility of this soling, and the unanimous appreciation expressed by athletes stimulated the demand for crêpe rubber soles both in Europe and America. The growing popularity of plantation soling rubber is seen in the fact that American leather shoe manufacturers are applying it to sport shoes and those for general wear as well.

The tonnage possibilities, should this soling rubber meet with general adoption as a substitute for sole leather, may be estimated on the basis that there were produced in the United States, in 1923, 350,000,000 pairs of leather shoes for general wear and 15,000,000 pairs of sport shoes. The soling requirements for this output of sport shoes might easily be 5,000 to 6,000 tons of crêpe a year.



Courtesy of F. R. Henderson & Co., Inc.

SMOOTH FINISH ROUGH FINISH

Natural Plantation Finish Crêpe Rubber Soling

Physical Properties

Natural crêpe rubber soling possesses a peculiar gristly texture which gives it great durability. Rubber as soling should be contrasted with leather rather than compared with it, for the materials are utterly unlike in properties. For example, crêpe soling has floating gravity, is tough, resilient, flexible, and waterproof, while leather soling has characteristics quite the opposite or unapproaching those of crêpe rubber.

Methods of Manufacture

Ordinary crêpe rubber, as produced for general rubber manufacturing purposes, is not the best quality for soling because it has not received the special milling necessary to secure the properties desired in crêpe soling. Plantation crêpe soling is a special grade distinct from ordinary pale crêpe by reason of the process of its production.

The coagulated latex is rolled out into very thin sheets 1/64 to 1/32 of an inch in thickness. These sheets are then subjected to a drying process and are then remilled together and built up into the required thickness. The milling or building up of crêpe sole rubber takes place immediately after the drying process. It is a physical impossibility to produce perfect crêpe sole rubber if old dried rubber which has aged in transit is used. The requisite texture and cohesion can only be obtained by milling on the plantations while the rubber is fresh from the preliminary processes.

Certain estates have developed another method of producing crêpe rubber soling of exceptional quality direct from selected washed coagulum. The details of the process are carefully guarded. However, the coagulum is compressed to required thickness and processed for special surface finish as represented in the illustration.

The final operation, by either method, is trimming the sheet soling to size. The standard dimensions for all thicknesses of sheet are 13 by 36 inches, which has been found the most economical. The standard thicknesses are ⅛, 3/16, ¼ and ⅜ inch. The finish of the surfaces may be smooth or corrugated on one or both sides. The sheets are carefully inspected and packed in cases with much care so that the sheets will not stick together.

Methods of Attachment

Slip Soles

The method of attaching crêpe soles to shoes by means of an intermediate or slip sole is very largely used. The slip sole may be of leather, cured rubber or fiber composition, upon one side of which a thin ply of crêpe soling is attached by cementing. The slip sole is sewed to the leather welt of the shoe. The crêpe

sole is then attached to the crêpe surfaced slip sole by freshening both rubber surfaces with benzol or a wash of thin pure rubber cement and a rolling pressure applied to expel air and insure contact over the entire bottom. This method is well adapted to volume production.

Crêpe Welts

Another effective method of attachment is by adhesive union of the full sole to a crêpe rubber sewed welt, known as the single unit system. This welt displaces the usual leather welt. It is constructed from strips of natural plantation finish crêpe soling rubber ⅛-inch thick by ⅝-inch wide, reinforced on one side at the sewing edge with a ¼-inch wide cotton tape stitched through the rubber; or by a ¼-inch wide strip of ordinary balata coated drill backing, familiar in leather shoe factories. By the use of such a rubber welt a good sewed attachment is possible, while the outer sole and welt adhere as a unit sole with inseparable edge.

Details of the Single Unit Process

The following outline includes the important details of applying crêpe soles by the crêpe welt or single unit process.

First, channel the insole all the way around the heel. In lasting do not wipe too far in at the heel. Sew the shoe full. Stitch the crêpe welting on just as you would leather Goodyear welting and make the joint at the side of the heel as usual. Be sure to butt the joint and do not scarf it. Joining is best accomplished by lapping the joint about ½ inch and then cutting through both thicknesses with a sharp knife. Do not cut the stitches. Split the welting and pull it out from under the joint.

For filling, it is best to use leather extending the entire length of the bottom. However, some other hard substance that will take cement may be used. The filling should be well cemented to the insole.

When ready to lay the soles, cement the entire bottom of the shoe, the welt and the inner surface of the crêpe outer sole with good benzol cement. Next, with a brush or swab, apply clear benzol to the surface of the welt which comes in contact with the sole. Benzol softens the rubber and makes it even more adhesive than rubber cement alone.

The time that should elapse between the operations of cementing and laying of the soles depends largely on weather conditions. On damp, dull days a much longer time will be required than on dry, sunny days. A little experimenting will readily show how to regulate the time for best results.

Economy of Plantation Crêpe Soling

The size of plantation crêpe soling is standardized at 13 by 36 inches because those dimensions are convenient for handling and very economical in cutting into sole forms. The wastage in practice runs from 15 to 25 per cent according to the proportions of sizes cut.

If kept clean, that is, free from leather scrap, buffings, fabric or other waste, crêpe soling trimmings can be salvaged in lots of 500 pounds or more, at about 75 per cent the current price of ordinary crêpe.

When the public becomes aware of the advantages of comfort and durability of crêpe rubber soles and heels for general as well as sport wear their popularity will afford an outlet of increasing dimensions for the highest grades of plantation rubber.

PENNSYLVANIA RAILROAD DOUBLES TRUCK SERVICE

About forty motor trucks are now being utilized by the Pennsylvania Railroad, these replacing local freight trains which previously were operated to carry less than carload freight. The system is said to have been completed for the State of New Jersey, while new truck units are being planned for the other divisions. The movement is also to be expanded to eventually include a collection service by motor truck between stations and terminals.

How Many Gallons in Any Cylindrical Tank?

By W. F. Schaphorst, M. E.

This chart will quickly give the number of gallons in a cylindrical tank of ordinary size and even beyond the ordinary sizes. To use the chart run a straight line across connecting the height of the tank in inches, Column A, with its diameter in inches, Column C, and the number of gallons is instantly given in Column B.

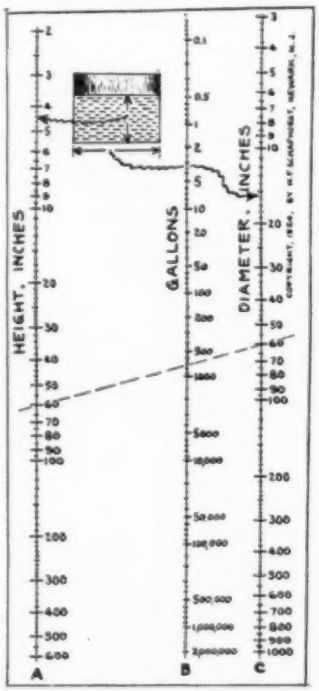


Chart for Measuring Contents of Cylindrical Tanks

For example, how many gallons will be held by a cylindrical tank 60 inches high by 60 inches in diameter? The dotted line drawn across the chart shows how it is done. Connect the 60, Column A, with the 60 in Column C, and the answer is shown by Column B to be very close to 740 gallons. Figure it out in longhand and you will find that the answer is 733 gallons, showing that the chart is very accurate indeed considering its wide range.

Inversely the chart may be used to figure the size of tank that will be necessary to hold a certain number of gallons. Thus if a tank is wanted to hold 740 gallons run any straight line through the 740 Column B and the intersection with Column A gives the height, and the intersection of the same line with Column C gives the diameter. By swinging a straight line around the desired point in Column B the most economical height and diameter combination are easily obtained. As will be observed, there are hundreds and thousands of combinations possible to hold 740 gallons. Also, if we should have a tank 60 inches in diameter and say 200 inches high, and it should be desired to pour only 740 gallons into it, the same dotted line drawn across this chart will show that by filling the tank to a height of 60 inches it will contain 740 gallons.

The range of the chart, as will be observed, is very great. It will take care of any tank all the way from 2 inches in height to 60 inches in height, and any diameter from 3 to 1000 inches. The maximum capacity of the largest tank is given as 2,000,000 gallons, or 40,000 barrels. The chart is based on the U. S. Standard of 231 cubic inches per gallon.

In case the tank is so large that one would prefer to use feet as a dimension instead of inches, this chart can still be used by multiplying the figures in Column B by 1728. Thus, if the tank should be 60 feet high by 60 feet in diameter the same dotted line would give the answer as 740 by 1728 equals 1,275,000 gallons. In this way the chart can be made to take care of very extraordinary sizes, the maximum capacity of Column B then being 2,000,000 times 1728, or 3,456,000,000 gallons.

THE HIGHEST FIGURE FOR UNITED STATES IMPORTATIONS OF crude rubber during the present year was recorded in April, at 85,042,981 pounds, value $20,531,821. In May, 1923, at 80,107,447 pounds, value $24,953,222, the corresponding value was higher, although the volume was lower.

The Present Status of Hevea Bud-Grafting

Extent, Purposes and Results—Still in Experimental Stage—Growth and Yield of Bud-Grafted Trees—Possibilities and Suggested Planting Methods

THE increasing practice of Hevea bud-grafting in Java and Sumatra, and the optimistic claims advanced for it as a means of producing fields of high-yielding trees, in view of the shortage of selected seeds, has aroused the rubber planting authorities of Malaya, where bud-grafting has had but little attention on a practical scale. Last autumn H. C. Pinching, senior scientific officer in Malaya of the Rubber Growers' Association, visited Java and Sumatra and made a thorough investigation of the extent, results and possibilities of bud-grafting. A summary of his report follows.

Rubber Growers' Bulletin

Bud-Grafted Hevea, Pasir Waringin Estate, Java

Extent of Bud-Grafting

Although bud-grafting originated in Java, it has not been employed there to any great extent as a source of planting material. Pasir Waringin Estate, the first to try bud-grafting, has about 40 bouws (70 acres) of six and seven-year bud-grafted trees planted 18 feet square. Bodjong Datar Estate in the same district has about 20 bouws (35 acres) of five-year bud-grafted trees of superior growth planted 20¼ feet square. A sister estate to Pasir Waringin has recently planted a considerable area with bud-grafted plants, and the Government Experimental Gardens in Buitenzorg contain a plot of bud-grafted trees now in tapping.

More has been done with bud-grafting in Sumatra, where up to last fall some 20,000 acres had been planted with vegetatively raised plants, more by American and Dutch than by British-owned estates. Last year the A. V. R. O. S. authorities supplied their subscribing estates with 19,000 meters of bud wood, each meter containing about 10 buds.

Few Malayan estates have gone into bud-grafting on a practical scale, although several have planted a few acres experimentally. One estate in the Kajang district has over 1,000 acres planted with bud-grafted plants, and the Malayan American Rubber Co. has somewhat less than this acreage so planted.

Purpose of Bud-Grafting

Great variation is observed in the yield of Hevea trees in a field, and the desirability of reproducing only high-yielding trees for further planting has long been recognized. Bud-grafting was suggested as a means of reproducing Hevea vegetatively on the analogy of such methods in horticulture to procure the continuation of certain desired characteristics of a tree in its offspring. Reproducing latex yield, however, is hardly comparable with reproducing a certain kind of fruit or flower. Apple grafts, for example, bear the same kind of fruit as the mother tree, but the quantity of the fruit borne may vary considerably. The same appears to be true of Hevea.

Not Yet An Unqualified Success

It has been found that buds from a tree yielding a latex possessing some peculiar characteristic (e.g., yellow) give rise to a new tree also yielding latex possessing the same characteristic, despite the nature of the latex yielded by the stock upon which the budding was made. Again it is the quality, not the quantity factor, that is reproduced in the vegetative offspring. As it is the quantity not the peculiar quality of latex yielded by the mother tree that it is desired to reproduce in the offspring, bud-grafting can hardly be considered an unqualified success as a certain means of raising high-yielding trees.

Dr. Cramer, the most optimistic scientific investigator in Java is not yet ready to advise bud-grafting on a large scale, while Sumatra experts, all optimistic of the results of bud-grafting, are advocating mixed planting of bud-grafted and selected seed plants.

These facts indicate that bud-grafting is still in the experimental stage, with the principal question involved still unproved; also, that however encouraging certain results obtained are considered they can as yet be taken only as indications and with no sense of finality. Moreover, it has become apparent that it is not, as was first suggested, a simple, straightforward method (as in the case of rose bushes and fruit trees) of transposing buds from good yielding trees to young trees in order to obtain equally good vegetative offspring, but is instead a matter bristling with difficulties and uncertainties which only lengthy and careful investigations can solve.

Growth of Bud-Grafted Trees

Growth of the tree and yield of latex are the chief measures of the success or failure of bud-grafting Hevea. Results to date indicate that as a means of raising new plants bud-grafting is well within the realm of practical planting politics. Over 90 per cent of successful graftings have been obtained in certain fields on some estates, and it is estimated that the extra cost of planting an area with such material as against planting seed at stake or ordinary stumps should not exceed $15 per acre, including all the preparation of the plants.

Generally speaking, the rate of growth of bud-grafted plants is similar and quite as satisfactory as that of ordinary seed-produced plants. Bud-grafted trees, however, have certain distinguishing characteristics, the most striking of which is the curious cylindrical shape of their trunks. At several feet above the ground their circumference is but slightly less than at the ground level. This means that the rate of decrease in the cortical layers of bud-grafted trees as one ascends the trunk is much less than that found in ordinary seed-grown trees.

Another very noticeable characteristic in bud-grafted trees is the marked similarity of the trees belonging to one clone, that is, raised from buds obtained from one and the same tree. This applies not only to the crown formation and the size and shape of the leaves, but to the thickness and general external appearance of the bark and other phenomena.

Generally speaking, the bark of bud-grafted trees is thinner than that of seed-grown trees and the renewal of tapped bar-

is slower and poorer. Both points are particularly noticeable on the older bud-grafted trees in Java. It has been suggested that as the trunk of a bud-grafted tree is a branch of the mother tree, its bark is "branch" bark and thus normally thinner than "trunk" bark. Even in the oldest bud-grafted trees it has been noticed that the trunk bark usually differs greatly from that of the rest of the tree. The quality of bark renewal appears to be characteristic of the trees of certain clones.

Trees belonging to one clone also resemble each other in respect to the general distribution of the laticiferous vessels, stone cells and other tissues in the cortical layers. This fact is useful for identification purposes during the early life of the bud-grafted trees before seeds are available. Later the characteristic shape, marking and coloring of the seeds serve for identification of clones.

It is certain that the growth and development of bud-grafted trees for the first eight years of their lives, generally speaking, are very similar, age for age, to the growth and development of seed-grown trees. Beyond that age experience with Hevea is still lacking.

Yield from Bud-Grafted Trees

It is obvious that the growth of bud-grafted trees is secondary to their yields, which must be the real criterion of the success or failure of bud-grafting. Moreover, it has been observed, as in the case of seed-grown trees, that the best-grown bud-grafted trees are not necessarily the best latex yielders. Unfortunately, conclusive results from the tapping of bud-grafted trees are not yet obtainable. The published results to date can hardly be regarded either as supporting or disproving the success of bud-grafting as a means of raising areas of high yielding trees. Mr. Pinching's deductions from the published results, and personal investigation are as follows:

(1) There is a greater similarity between the yields of the bud-grafted trees of one clone than between the yields of trees grown from the seeds of one mother tree or the trees grown from selected seeds.

(2) Buds taken from the high-yielding trees do not necessarily give rise to high-yielding offspring; that is, there appears to be no correlation between the yields of vegetative offspring and of the mother trees.

Mr. Pinching expresses the opinion that such results as have been obtained justify every hope that there is something in bud-grafting and that every effort should be made to follow up the lines of action suggested by these results. When properly carried out, with due consideration for all the factors involved, he believes that planting material will be obtained that will give higher yields than those obtained at the present time on the average rubber estate by planting unselected seeds.

The H. A. P. M. authorities have already isolated constitutionally high-yielding mother trees, the vegetative offspring of which will yield 400 to 500 pounds per acre when brought into tapping at the age of four to five years. The average yield of ordinary planted trees is hardly 200 pounds per acre at a similar age. The A. V. R. O. S. has also isolated constitutionally high-yielding trees. A considerable amount of bud wood from such isolated trees has already been supplied to estates.

Possibilities of Bud-Grafting

Dr. Cramer suggests that the quantitative yield of a tree depends upon two factors: (1) constitution of the tree; (2) environmental conditions.

Thus the highest yielding trees should be obtained when trees which are constitutionally high yielders are existing under the most suitable environmental conditions.

It is suggested that it is only the "constitution of the tree" factor, as affecting the yield, which is transmitted from the mother tree to its vegetative offspring. It is extremely difficult as yet to estimate to what extent the high-yielding characteristic of a tree is due to the "constitution" factor or the "environment" factor. When it is found that the vegetative offspring of a high-yielding mother tree persists in giving high or above average yields, irrespective of the environmental conditions under which such offspring are placed, then that mother tree can be considered to be a constitutionally high latex yielder. It would appear, therefore, that the basis of all expectations by bud-grafting must depend upon the selection of those trees as mother trees which are constitutionally high yielders because their vegetative offspring are high yielders.

Certainly it is obvious that it is not worth while bud-grafting from trees of which no records are available as to their latex-yielding capacity. Also the sale of bud wood, except by experimental gardens supervised by scientists, is not altogether advisable.

Selection of Mother Trees

The selection of a tree suitable for use as a mother tree is not a simple matter. The first basis of selection attempted was that of the number of laticiferous rings occurring in the cortical layers, it being believed by Dr. Vischer that a correlation existed between the trunk measurement and the number of latex rows of each clone. Dr. Steinmann and others, however, have since shown that the number of laticiferous rings is largely affected by environmental conditions, such as manuring and depth of soil.

The actual yield of the trees has therefore become the commonly accepted basis for selection. Some high-yielding mother trees appear always to give high or above average yielding vegetative offspring. As it is impossible, however, to foretell with certainty whether this characteristic of a tree will appear in its offspring, it is necessary to carry out experimental work first to determine the possibilities of any tree.

Suggested Planting Methods

As to the question whether bud-grafting is the only, the easiest, or the best method to employ to obtain higher yielding planting material, Mr. Pinching believes it possible that planting, say, two hundred seed-selected plants per acre and the removal during the first five years of the poorer yielding, poorer developed one hundred may result in as high a yielding area as that given by planting with bud-grafted material, and a higher yielding area than by planting one hundred unselected seed-produced plants per acre.

In view of the greater expense, the greater risks, the loss of time, and the possibility of poorer trees resulting from bud-grafted material he emphasizes the desirability of conclusive comparative data regarding the relative merit of these methods. For that reason, and because of the insufficient supply of selected seeds, it now seems desirable for present purposes to plant mixed bud-grafted and seed-selected plants at about 200 per acre, and then to remove the low yielders.

In five years, perhaps, when the present planted bud-grafted trees bear seed, and when all low-yielding trees have been removed from these areas, then a plentiful supply of seeds, the progeny of high-yielding parents, will be obtainable. Until that time, however, bud-grafting offers an easier and more plentiful method of obtaining selected plants. One bud from a desired tree can be made to give rise to about fifty new buds in a year by planting up a "bud-wood" nursery.

Some scientists regard bud-grafting rather as a suitable means of isolating definitely constitutionally high yielding clones and of obtaining from them seeds of known parentage than as a direct means of obtaining material for planting estates. They consider that there is more hope of obtaining higher yielding areas in planting selected seeds than in planting bud-grafted material.

"PNEUMATIC TIRES," BY HENRY C. PEARSON. AN ENCYCLOPEDIA of tire manufacture, repair, rebuilding, machinery and processes.

What the Rubber Chemists Are Doing

The Determination of the Size of Particles and Their Distribution[1]

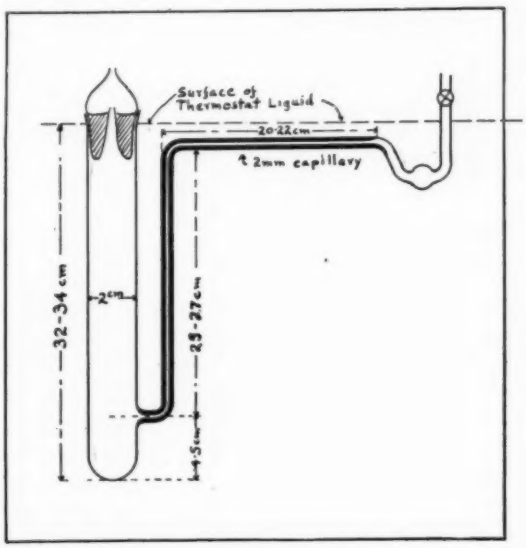
By W. J. Kelly[2]

THE author's method is a modification of that of von Hahn. In the following extracts are given the preparation of the sample and the operation of the specially designed apparatus which is illustrated.

The method is one by which the size of the particles of a suspension can be easily and accurately determined. The distribution of the particle size can also be obtained. The method presupposes the validity of Stoke's law for the rate of settling.

Preparation of the Sample

In order to get reliable results it is necessary that the sample be perfectly dispersed or in other words all agglomerates must be broken up and only primary particles left. This may be done by moistening a weighed amount, for instance 1 g., on a glass plate and rubbing it with a spatula. A few cc. of a protective colloid solution such as 5 per cent gum arabic and a small amount of an electrolyte, such as 1 cc. of a 5 per cent barium solution



Sedimentation Tube for Determination of Particle Size

for barium sulphate or zinc chloride or sodium hydroxide for zinc oxide, etc., are added as a peptizing agent and the whole mixture is rubbed well with the spatula. The mixture is then diluted gradually until it is fairly thin, washed into a graduate and made up to 100 cc. or whatever volume is desired. In this way a very good dispersion can be made.

Sedimentation Tube

The apparatus shown in the illustration is a specially designed modification of the sedimentation tube of von Hahn.

The large tube, which should be about 2 cm. in diameter, has a ground jointed cap in the interior of which a small amount of water can be placed. This water is held at the same temperature as that in the tube proper, hence by keeping the pressure of the water vapor constant below the cap any evaporation which takes place would naturally come from the water in the cap as that is nearer the opening of the tube. The small bulb at the outer end of the capillary serves the same purpose.

The dimensions which should work best are given, although the settling tube can be made any convenient length. Naturally the longer the side tube the greater will be the initial level difference and hence the greater the accuracy, for a given suspension.

Operation

The tube and capillary are first cleansed with potassium bichromate-sulphuric acid mixture and then rinsed thoroughly with distilled water. The whole tube is then filled with water to the proper level which is such that the meniscus in the capillary is at the lower end of the horizontal portion. The height of the column in the settling tube is then measured from the entrance of the side tube and also the volume. The stopcock at the upper end of the side tube is closed and the settling tube emptied. The suspension is then poured in up to the same level where the water stood and the tube placed in the thermostat. The tube is held firmly so that the angle of inclination of the side tube is constant. The stopcock is then opened and readings are begun. The first reading is taken one minute after setting the tube or at any other convenient interval. After about five readings have been made they are plotted and extrapolated to zero time in order to get the zero reading on the capillary tube.

In the case of suspensions which settle slowly this is not necessary as the reading at the end of one or even two minutes can be taken for the zero without introducing any appreciable error. In order to prevent the water from sticking in the capillary tube it is recommended that a fairly large capillary (2 mm.) be used and also that some of the protective colloid such as gum arabic, gelatin, saponin, etc., be added to the water in the capillary to reduce its surface tension and thus render it less liable to give false readings due to imperfections or specks of dirt in the capillary.

Calculation

In order to calculate the weight of material which settles past the side tube the density of the suspension has to be known in terms of the medium and the specific gravity of the suspended material. Knowing the total weight of solid phase in the suspension it is a simple matter to calculate the percentage which settles out in a given time by application of the formula given by the author.

[1]Paper read at the Second National Colloidal Symposium, Evanston, Illinois, June 18-21, 1924. Abstracted from *Industrial & Engineering Chemistry*, September, 1924.

[2]Research Laboratories, The Goodyear Tire & Rubber Co., Akron, Ohio.

The So-Called Electro-Viscous Effect in Rubber Solutions[1]

By G. S. Whitby

Abstract

It has been found that solutions of rubber in dry benzene suffer marked diminution of viscosity when treated with minute quantities of organic acids or of organic bases, and further, that the order of effectiveness of a series of acids or of a series of bases is, broadly speaking, in the order of the dissociation constants as determined in aqueous solution. The order of magnitude of the effects observable may be indicated by an example: 0.4 mg. of piperidine per 100 cc. reduced the viscosity of a benzene-rubber solution by 12.5 per cent. The maximal effect is usually obtained by the addition of about 10 mgs. per 100 cc.; and further addition produces no further substantial reduction of viscosity.

[1]Paper presented at the Second National Colloidal Symposium, held at Northwestern University, Evanston, Illinois, June 18-21, 1924.

It would appear that in addition to the solvation of the rubber by the benzene, there is a further factor in the stability of rubber solutions, namely, a charge on the particles. In view of the fact that both rubber and benzene have low dielectric constants, it is rather surprising to find that this latter factor is not unimportant, and that the viscosity is affected so considerably by the extremely small concentrations of ions to which the substances added to the solution must give rise.

Organic Acids and Bases

The effect of organic acids is readily explicable by supposing that hydrogen ions neutralize capillary negative charges on the rubber particles, but the effect of organic bases in reducing the viscosity presents a problem which is more difficult and demands further study.

Ammonia raises the viscosity. Potassium hydroxide raises it at first, but as the amount added is increased a fall in viscosity occurs. The acids normally present in the resin of Hevea rubber reduce the viscosity of benzene solutions of rubber.

While small amounts of acids added to benzene have no appreciable effect on the extent to which rubber will swell in benzene, small amounts of strong organic bases increase it greatly. For example, two per cent of piperidine almost doubles the degree of swelling. Such an effect, however, appears to have no connection with the fall in the viscosity of rubber solutions which bases produce, since the minute amounts required for the maximal effect on the viscosity have no appreciable effect on swelling.

The Chemistry of the Rubber Hydrocarbon[1]

By Harry L. Fisher[2]

Crude rubber is a mixture of several kinds of substances, a hydrocarbon to the extent of about 90 per cent, and the remaining 10 per cent of resins, resin acids, proteins and their decomposition products, cyclic sugars, inorganic salts, and moisture. The chemistry of crude rubber is therefore not only the chemistry of its chief constituent, the hydrocarbon, but also of these other substances. From the manufacturer's standpoint the chemistry of these other substances is likewise important, since they have a considerable influence on the chief chemical reaction in the manufacturing process, namely, vulcanization. They also have much to do with the mechanical working of rubber and with the aging of rubber articles. It is, however, the hydrocarbon to which rubber owes its characteristic properties, and it is the chemistry of this hydrocarbon, the rubber hydrocarbon, which interests us here.

Isolation and Properties

It is possible to obtain the rubber hydrocarbon in what is believed to be a pure condition, by extraction of the resins with acetone, by dissolving the extracted rubber in benzene, decanting from the insoluble material, and precipitating by pouring the solution into alcohol, and repeating this solution in benzene and precipitation with alcohol several times. When these processes are carried out in the absence of air, the analytical results on the product show that it is a pure hydrocarbon of the empirical formula C_5H_8. It gives a colloidal solution in benzene, gasoline, chloroform, carbon bisulphide, etc., and since its molecular weight is unknown, the formula can be written $(C_5H_8).x$, where the value of x is very high but not yet determined. In the pure state it is much more susceptible to oxidation by the air than in its crude form. It has no constant melting point or crystalline structure, and when distilled, especially in a vacuum of 0.1 mm. it decomposes, giving off highly unsaturated hydrocarbons such as isoprene (3.1 per cent), dipentene (8.8 per cent), a $C_{15}H_{24}$ compound (4.4 per cent), and similar compounds of higher molecular weight, and leaving a residue of 36.5 per cent, which material is about one half as saturated as rubber itself.

The chief chemical reaction of the rubber hydrocarbon is addition. In other words, the compound is unsaturated, and a study of the products leads to the conclusion that there is one double bond for each C_5H_8 group.

The Halogen Derivatives

The halogens all react with the rubber hydrocarbon. Chlorine gives a white product in which substitution as well as addition takes place. Substitution is the chief reaction in the early stages. Bromine acts similarly to chlorine, but in cold, very dilute solutions it gives an addition product known as "rubber tetrabromide." Its formation has been employed for estimating the rubber hydrocarbon.

Hydrohalides

Hydrogen chloride, hydrogen bromide, and hydrogen iodide add to form definite addition products. Harries and his students derived from the hydrochloride the rubber-like product known as "alpha-iso-rubber."

Sulphur

Sulphur adds with the formation of $(C_5H_8S).x$, a brown, insoluble powder. Hard rubber probably contains it, possibly as the chief constituent in most cases. It does not add bromine and therefore may be considered a saturated compound. Ordinary (soft) vulcanized rubber may or may not contain this rubber sulphide. The incorporation of purified rubber sulphide in crude rubber and then heating the mixture does not give a product resembling vulcanized rubber in any way. No one has ever isolated any rubber sulphide from ordinary vulcanized rubber. Soft vulcanized rubber contains most of the sulphur in a chemically combined condition, a small proportion being in simple solution and removable by extraction with acetone.

Sulphur Monochloride

Sulphur monochloride in small proportions at the ordinary temperature vulcanizes rubber. It is used in the so-called "acid," "vapor" cure, or "cold vulcanization" processes. The sulphur chloride compound may be the end product of vulcanization with this reagent, although it has never been isolated from such vulcanized rubber or from rubber gels prepared with the same reagent.

Oxygen

Oxygen, when pure or as in the air, attacks rubber both in and out of solution, especially in the presence of light, and slowly changes it to resin-like substances.

Ozone and Rubber

The most notable work on the addition products of the rubber hydrocarbon and the most important in the chemistry of rubber is that of Harries on the action of ozone. Like other unsaturated hydrocarbons rubber forms an ozonide. It is a glossy solid, melting at about 50 degrees C., is very explosive, and is saturated toward bromine.

Hydrogen

The chemical reactions of the rubber hydrocarbon all indicate the presence of double bonds in its structure, and yet until very recently one of the chief reactions of such an unsaturated compound, hydrogenation, had not been realized. A complete and excellent report has been given by Pummer and Burkard[3] of the addition of hydrogen to the rubber hydrocarbon in the presence of platinum black at the ordinary temperature. The hydro-rubber is similar to rubber itself in that it is highly elastic, but it is almost colorless and is soluble in ether, giving a colloidal solution. It is extremely susceptible to air oxidation, thereby being trans-

[1] An address delivered before the New York Section of the American Chemical Society, December 14, 1923.

[2] Research Department, The B. F. Goodrich Co., Akron, Ohio.

[3] "Berichte der Deutschen Chemischen Gesellschaft," 55, 3458, 1922. *Chemical Abstracts*, 17, 898, 1923.

formed into a substance with the same empirical formula as natural rubber. This new rubber is not the same as natural rubber and is called iso-rubber H. It is soluble in ether, and, like rubber, on hydrogenation adds two atoms of hydrogen for each C_5H_8 nucleus.

Synthesis

In spite of the fact that the constitution of the rubber hydrocarbon is still unsettled, attempts to synthesize it from isoprene seem to have been successful. It is, to be sure, impossible at present to tell whether the synthetic product is exactly the same as that isolated from crude rubber, since there are no physical constants available for proper comparison. Harries caused the polymerization of isoprene to take place in the presence of glacial acetic acid, by heating the mixture at 100° C. for eight days. The product shows the same solubilities as the natural hydrocarbon, is vulcanized with sulphur chloride, forms hydrohalides, a "tetrabromide," a nitrosite, and an ozonide whose decomposition products are the same as those from natural rubber. This type of polymer is styled "normal." "Abnormal" rubber is obtained when the polymerization is effected in the presence of metallic sodium. It answers similarly, although not so well, to the general tests, and the decomposition products of the ozonide show that the linking is irregular.

Chemical Patents

The United States

WATERPROOFING FOR CLOTH. A waterproofing composition composed of viscid vegetable oil, approximately 40 to 50 per cent; rubber 5 to 10 per cent; asphalt 5 to 10 per cent, and a filler of 30 to 50 per cent.—Nathaniel A. Thompson, Kansas City, Kansas. United States patent No. 1,502,598.

PROCESS FOR VULCANIZING RUBBER. A vulcanized rubber derived from rubber combined with a vulcanizing agent and a reaction product of an aldehyde having seven carbon atoms in a straight hydrocarbon chain and ammonia.—Sidney M. Cadwell, Leonia, New Jersey, assignor to The Naugatuck Chemical Co., Naugatuck, Connecticut. United States patent No. 1,503,113.

PROCESS OF ACCELERATING VULCANIZATION OF RUBBER. The process consists in adding urea as an accelerator and sulphur to the rubber and subsequently heating this mixture to a vulcanizing temperature.—William F. Russell, assignor to The Norwalk Tire & Rubber Co., both of Norwalk, Connecticut. United States patent No. 1,503,429.

VULCANIZING RUBBER. The method which consists in adding zinc oxide, sulphur and urea to a rubber responsive to zinc oxide and vulcanizing the resultant mixture.—William F. Russell, assignor to The Norwalk Tire & Rubber Co., both of Norwalk, Connecticut. United States patent No. 1,503,430.

RUBBER VULCANIZATION AND PRODUCT. The method of accelerating the vulcanization of natural or artificial rubber by vulcanization in the presence of ethylene diamine or any of its derivatives.—Harold A. Morton, Akron, Ohio. United States patent No. 1,503,702.

The United Kingdom

SELF-VULCANIZING COMPOSITIONS. Self-vulcanizing compositions and solutions contain rubber, zinc oxide, sulphur, and zinc or cadmium normal or iso-propyl xanthogenate, either the sulphur or the xanthogenate, alone or in solution or admixture, being added shortly before the composition is required for use, whereupon vulcanization commences without the application of heat.—Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London, and D. F. Twiss, Fort Dunlop, Erdington, Birmingham. British patent No. 215,796.

INOSITOL PHOSPHORIC DERIVATIVES FROM LATEX SERUM. Quebrachitol is obtained by concentrating to 2.5 to 3.0 per cent of its weight the serum left after coagulating and separating rubber from Hevea latex, and allowing the syrup so obtained to stand until it deposits quebrachitol as a crystalline mass. From this phosphoric derivatives of inositol are obtained.—G. Bruni. British patent No. 216,982.

LATEX TREATED TENNIS BALL. Hollow rubber playing balls coated with rubber latex before or after vulcanization, and with or without a latex treated covering of felt or cloth. Latex may be applied to ball sections before or after assembling. In the latter case it is sprayed into the ball through a needle. The latex may contain vulcanizing agents and be colored by dyes, pigments or minerals.—R. Russell, Yaldergate, Beechwood, Heaton Park, Manchester, and H. Broomfield, 23, Davenport Road, Hazel Grove, Stockport. British patent No. 217,360.

The Dominion of Canada

RUBBER MANUFACTURE. Improvement in the manufacture of compounded rubber which comprises vulcanizing a rubber mix containing a zinc oxide product characterized by one or more of the following properties: (1) an average particle size not exceeding about 0.15 microns, (2) the capacity of substantially accelerating the cure of compounded rubber, (3) the capacity of imparting to compounded rubber an increased resistance to abrasion of about 50 per cent, and preferably 100 per cent or more, greater than that of compounded rubber of similar composition reinforced with an equal weight of the standard rubber reinforcing zinc oxides.—The New Jersey Zinc Co., assignee of James A. Singmaster, Frank G. Breyer and Earl C. Gaskill, Palmerton, Pennsylvania. Canadian patent No. 242,026.

Germany

VULCANIZATION OF RUBBER. Phosphorous sulphides or oxides are applied as agents for vulcanizing rubber, whether at ordinary or higher temperatures and, if desired, in the presence of solvents, rubber substitutes, and other vulcanizing agents.—Asbest und Gummiwerke A. Calmon A.-G., and H. Rimpel. German patent No. 393,293, 8, 10, 22.

Austria

Patent Published, May 15, 1924

A3,684-22 Method of making pieces of foam out of rubber or the like. F. Pfleumer, Dresden, Germany.

NATURAL CHALK WHITING

Most rubber men will scarcely fail to appreciate the special adaptation of natural chalk whiting to rubber compounding, especially in the better classes of soft rubber articles. Such whiting is made exclusively from imported English cliffstone and chalk and is not to be confused with that which is manufactured from domestic limestones found in the United States, nor from Belgian, Danish or Swedish chalk. While these analyze practically the same calcium carbonate content they do not possess the same physical qualities as whiting produced from English chalk and cliffstone. The different grades of whiting from English sources include extra commercial, gilders, extra gilders, American Paris white, and English cliffstone Paris white.

RUBBER TECHNICAL SERVICE LABORATORY

In addition to a large corps of research and manufacturing chemists engaged in solving problems connected with the products of E. I. du Pont de Nemours & Co., the company maintains a completely equipped rubber laboratory under the direction of experienced rubber chemists, and by these facilities supplies a technical and consulting service to users of the rubber chemicals made by the company.

Meeting of Crude Rubber Committee, American Chemical Society

A meeting of the active members of the Crude Rubber Committee, American Chemical Society, was held August 16 in New York, N. Y. There were present D. F. Cranor, C. W. Sanderson, E. A. Van Valkenburgh, R. P. Rose, and Mr. Clark representing W. R. Sturtevant. The discussion included rubber testing procedures and letters commenting on the work of the committee from Dr. de Vries, director of the Central Rubber Station, Buitenzorg, Java, and J. A. Nelson of the Imperial Institute, London, England.

The following procedures are to be used by the committee in connection with formula No. 1: 450 grams of crude rubber and 45 grams of sulphur. This batch is mixed at 75 degrees C., using no water or steam in the mill. After four minutes' breakdown mastication the sulphur is added and four minutes taken to mix it into the rubber. The mixed stock is aged for 24 hours, then cured for periods of 75, 90, 105, 120, 135, and 150 minutes at 298 degrees F. After a 24-hour rest period following vulcanization the complete stress-strain data is determined, obtaining the values by measuring the load at intervals of each inch of stretch or 100 per cent of elongation.

In employing formula No. 2, 450 grams of rubber is to be broken down four minutes at 75 degrees C., without water or steam in the rolls, but cooling water is to be passed through the mill during addition of zinc oxide, accelerator and sulphur. The vulcanizing conditions for this stock, with each rubber, are to be 50, 60, 70, 80, and 90 minutes at 298 degrees F. A 24-hour rest period will precede and follow vulcanization. Complete stress-strain data is to be determined as recommended in case of formula No. 1.

A tentative program was read and discussed and will be given consideration in the work of the committee.

Data on rubber evaluation with different accelerators was also submitted, substantiating the point that different accelerators have various effects on different rubbers, and that rubbers slow curing with one accelerator may be fast curing with others.

A résumé of the work on this feature will be given in connection with the progress report of the committee to be made by its chairman at the coming meeting of the Rubber Division in Ithaca.

MEETING OF THE RUBBER DIVISION, A. C. S.

The sixty-eighth meeting of the American Chemical Society will be held at Ithaca, N. Y., September 8 to 13, 1924.

Owing to the remoteness of Ithaca from the centers of the rubber industry, the program of the Rubber Division is shorter than usual. This fact, however, will afford rubber chemists who attend an opportunity to be present at the sessions of other sections.

The papers to be read before the Rubber Division are as follows:

THE EFFECT OF PIGMENT VARIABILITY ON THE PHYSICAL PROPERTIES OF RUBBER COMPOUNDS. H. A. Winkelman.

Abstract. The variation in properties of a compound which was repeatedly mixed and cured during a period of six months was greater than experimental error. The effect of the source of various pigments was determined. The variation produced by some of the samples was too large to permit of direct substitution of one source for another.

THE MIXING OF RUBBER COMPOUNDS. R. B. Stringfield. Lantern.

Abstract. A discussion from the compounders' viewpoint of the factors affecting milling. Data is given on power consumption, milling temperatures, effect of roll sizes, speed, ratios, gage, etc.

PLASTICITY CONTROL IN RUBBER MIXING. Paul Beebe and R. B. Stringfield. Lantern.

Abstract. The use of plasticity measurements in factory control is illustrated and the effect of variations in milling practice shown. Examples show large savings in milling time and in reduction of spoiled stock.

RUBBER LATEX PARTICLES. E. P. Wightman and A. P. H. Trivelli. Moving Picture Illustrations.

Abstract. Ammonia preserved latex is examined by motion picture micro-photography. The rubber particles were found to be liquid, normally spherical, to range in size from 0.2 to 4.0 *mu* in diameter and to have strong Brownian movement.

Committee Reports and Business Meeting.

NATIONAL SAFETY COUNCIL FALL MEETING

The Thirteenth Annual Safety Congress of the National Safety Council will be held at Louisville, Kentucky, September 29 to October 3, 1924.

At the joint meeting of the Chemical and Rubber Sections, September 30, two papers of special interest to rubber technologists will be read. These are, a report of committee on benzol poisoning, by Prof. C. E. A. Winslow, Yale University, New Haven, Connecticut, and a round table discussion on prevention of lead poisoning.

Rubber Section Program

FIRST SESSION

Wednesday Morning, October 1, at 10:00 o'clock, Brown Hotel

GENERAL

I. Reports of Officers and Committees.
II. Appointment of Nominating Committee.

ADDRESSES

1. Discussion.
2. Dust Explosion in the Rubber Industry—Fred S. Hoxie, Engineer, Associated Factory Mutuals Fire Insurance Companies, Boston, Mass.—Discussion.
3. Better Posture When Seated—G. Raymond Tuttle, C. A. Cook Company, Cambridge, Mass.—Discussion.

ELECTION OF OFFICERS

SECOND SESSION

Thursday Morning, October 2, at 10:00 o'clock, Brown Hotel

ADDRESSES

1. Chronic Insidious Bone and Joint Disease as a Cause of Prolonged Industrial Compensation—Dr. H. R. Conn, Goodyear Tire & Rubber Company, Akron, Ohio.—Discussion.
2. Proper Ventilation of Mixing Mills—A. W. Crooks, C. J. Cox Engineering Company, Cambridge, Mass.—Round-Table Discussion.
3. Rubber Industry From a Life Insurance Standpoint—Robert J. Vane, Jr., Supervisor, Occupation Rating Section, Metropolitan Life Insurance Company, New York City.—Discussion.

TENTH EXPOSITION OF CHEMICAL INDUSTRIES

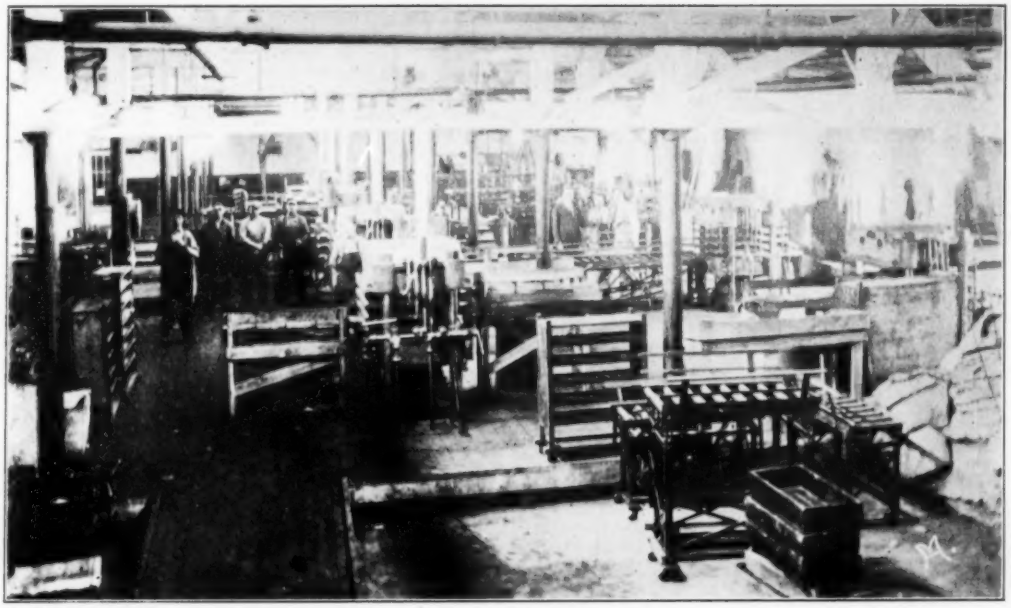
There has apparently been some confusion in connection with the date of the next chemical exposition, regarding which announcement has been sent out by the International Exposition Co., under whose management the Exposition of Chemical Industries has been held since 1915.

The next exposition will not be held in 1924, but will take place September 28 to October 3, 1925, at the Grand Central Palace, New York, N. Y. It was voted last year by exhibitors to skip a year and to hold the next exposition in 1925 at the time and place above mentioned.

CHANGE IN DATE OF M. & A.M.A. FALL CONVENTION

A change in the date of its fall convention to October 15, 16 and 17 has been announced by the Motor and Accessory Manufacturers' Association. E. P. Chalfant has been appointed chairman of the program committee, which will make arrangements regarding topics, speakers, and hotel accommodations.

In order to keep members informed regarding plans for the 1925 National Automobile Shows at New York and Chicago, the show department of the Motor and Accessory Manufacturers' Association is now publishing a house organ entitled "Show News," the first number containing four pages. The new publication, which will be issued frequently will confine itself entirely to information regarding space assignments at shows in which the Motor and Accessory Manufacturers' Association participates.



Endicott-Johnson Corp.

Rubber Heel and Sole Press Room

Rubber Heels and Soles Made in Leather Shoe Plant[1]

A New Industrial Development—Rubber Plant Installation in Leather Shoe Industry—Investment, Output and Equipment

ENTERPRISING manufacturing concerns engaged in the production of staple goods frequently include in their plant organization a department for the manufacture of certain important goods essential for making their main product. Thus, many rubber companies have installed reclaiming departments, others have added hose wearing, rim production units, etc. The actuating motives in these departments are the possibilities of increased profit and the important advantages of control of quality, delivery and the development of various special features.

Rubber Plant in Leather Shoe Factory

Following this course of development one of the leading American concerns making leather shoes has enlarged its plant, installing a rubber department employing about 200 people. This force is now working day and night in three eight-hour shifts producing rubber soles and heels for the shoe output of the main plant.

Investment, Output and Equipment

In the instance here referred to, approximately one quarter of a million dollars are invested in the installation. At the present time the daily output is 18,000 pairs of soles and 45,000 pairs of heels, with constant increase of production.

Endicott-Johnson Corp.

Molded Rubber Soles and Heels

The organization and equipment of this plant naturally includes the best that has been developed for the production of rubber soles and heels as to layout, processes, and machinery. The general view of the rubber department reproduced herewith shows the installation of curing presses. These are four-opening, with 32 by 40-inch rolled steel platens. They are provided with a special long-life packing which effectually prevents leakage of the ram, while permitting its easy movement. A two-pressure valve operates the press, low pressure being used to close the molds, followed by high pressure for compression of the stock during cure. By this arrangement rapid operation of the press is assured.

Special Molded Soles

The special composition rubber sole and heel produced may be seen in the accompanying illustration, which shows at the left a raw stock sole blank cut for molding; in the center a cured sole, untrimmed, and at the right a cured trimmed sole. These, with one or two heels designed to match them, lie upon a background of plantation ribbed smoked sheet rubber, their principal basic ingredient, insuring extreme toughness and wearing quality.

Natural Crêpe Rubber Soles

Other products turned out largely for sport shoes are combined soles and heels cut and built from natural plantation-finish crêpe

[1] Data and illustrations supplied by Endicott-Johnson Corporation, Johnson City, N. Y.

rubber soling. This material is prepared on certain plantations of the Far East. It combines the maximum of cleanliness and quality and unquestionably represents perfection in crude rubber preparation. It is die cut, as received, the same as leather soling, and heels are built up in layers on the soles by adhesion.

This venture into rubber heels and sole manufacture will probably be duplicated in the future by other large and enterprising leather shoe companies that appreciate its advantages.

Activities of the Rubber Association of America

DUE to the vacation period, association activities during the past month were very quiet, and confined to routine office matters. There is therefore nothing to report in these columns particularly as there were no division or committee meetings scheduled for August.

Rubber Association Standardizes Radio Panels

The Rubber Association of America, Inc., has adopted stringent quality standards for hard rubber radio panels, as well as a special diamond-shaped symbol which will appear on panel containers to indicate that the panels meet the association's standards. This symbol may be used only by manufacturing members whose panels conform to those requirements. Its use signifies that the manufacturers guarantee the quality and special suitability of their products for radio work.

The Hard Rubber Manufacturers' Division of the Rubber Association has adopted specifications covering absorption, volume, resistivity, phase difference angle and dielectric constant. These are the major qualities which determine the suitability of any radio panel for its particular work. Hard rubber excels all other insulating compounds in these properties. Consequently, the purchase of hard rubber radio panels which meet the association's quality standards assures all of these advantages to the radio enthusiast.

This action will solve a very troublesome problem. Hard rubber of the proper qualities is perfectly suited for radio work, but the presence in the market of low-grade hard rubber panels has confused the situation, and the leading manufacturers of the United States are associated in this movement to protect the public from inferior materials. Consequently, purchasers will find it easy to avoid unsatisfactory goods by buying hard rubber panels which bear the individual maker's trade mark and are sold in containers carrying the quality symbol of The Rubber Association of America, Inc.

June Production, Inventory and Shipments of Tires

June production, inventory and shipments of cord casings all exceeded those for the same period last year, according to compilations prepared by the Rubber Association of America. The decline continues, however, in the production, shipment, and inventory figures for fabric casings, as well as for inner tubes, solid and cushion tires, although June shipments of inner tubes and also solid and cushion tires have increased as compared with corresponding figures of a year ago.

June statistics for cord and balloon casings include: Inventory, June 30 (1924), high pressure, 3,567,635, and balloon, 734,649; production, June, high pressure, 1,530,872, and balloon, 560,130; shipments, June, high pressure, 1,683,898, and balloon, 317,215. Corresponding figures for inner tubes are: Inventory, June 30 (1924), high pressure, 7,476,962, and balloon, 689,196; production, June, high pressure, 3,057,152, and balloon, 436,279; and shipments, June, high pressure, 3,705,059, and balloon, 259,550.

The total production of high pressure and balloon casings for the first six months of 1924 is estimated at 12,792,159, while shipments for this period are 11,522,523 casings. Production of fabric casings for these six months reaches 6,109,305, and shipments 5,680,099. Solid and cushion tire production is estimated at 367,234, and shipments 339,211. Corresponding figures for these six months show a production of inner tubes reaching 23,447,321, and shipments 21,639,651.

In general the June, 1924, inventory for cord casings increased 5 per cent as compared with June, 1923; production increased 14.5 per cent, while shipments also increased 48.5 per cent. Fabric casings inventory for June, 1924, showed a decrease of 37 per cent as compared with the corresponding month of the year previous; and decreases of 49.4 per cent and 38.8 per cent in production and shipments respectively. The figures for the June, 1924, inventory and production of solid and cushion tires also represented decreases of 24.9 per cent and 29.7 per cent respectively, but an increase of 4.5 per cent in shipments. Decreases of 8.4 per cent and 2.6 per cent respectively are also noted in the inventory and production figures for inner tubes, although as compared with June, 1923, there has been an increase of 8.2 per cent in figures for shipments.

INVENTORY—PRODUCTION—DOMESTIC AND FOREIGN SHIPMENTS OF PNEUMATIC CASINGS—INNER TUBES—SOLID TIRES

	Pneumatic Casings				Inner Tubes				Solid and Cushion Tires			
1922	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
Twelve months, 1922	..	58,401,086	30,698,139	29,221,899	..	72,463,938	38,137,181	36,656,435	..	2,320,650	786,603	688,845
Twelve months, 1923	..	67,448,419	33,933,936	32,991,810	..	87,807,770	45,128,083	43,554,963	..	3,013,674	692,148	690,090
1924												
January	56	4,808,084	3,220,292	2,838,570	51	6,720,247	3,887,959	3,542,500	10	182,782	53,604	47,295
February	55	5,265,133	3,278,674	2,866,626	50	7,339,307	4,067,631	3,397,668	10	188,519	60,646	52,965
March	57	5,763,084	3,427,692	2,990,872	53	8,157,704	4,218,950	3,500,105	10	203,608	68,662	61,483
April	60	6,164,226	3,307,478	3,013,441	54	8,627,343	4,035,242	3,586,279	10	212,419	69,534	58,486
May	58	6,313,193	3,038,586	2,769,970	53	8,761,812	3,744,108	3,648,490	10	219,538	63,901	60,267
June	55	6,155,537	2,629,742	2,753,143	51	8,166,158	3,493,431	3,964,609	10	212,704	50,887	58,716

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipment" prior to January, 1924, includes only stock forwarded to a purchaser and not stock forwarded to warehouse, branch, on consignment basis, or abroad. After January, 1924, shipments abroad are included in these figures.

(Compiled by The Rubber Association of America, Inc.)

Statistics Compiled from 1924 Questionnaire Covering the Second Quarter of 1924[1]

RECLAIMED RUBBER	Long Tons: Inventory at End of Quarter	Production	Shipments
Reclaimers solely (7)	3,686	10,851	10,081
Manufacturers who also reclaim (16)	3,170	1,446	1,204
Other manufacturers (50)	1,668	.....	.....
Totals	8,524	11,297	11,285

SCRAP RUBBER	Long Tons: Inventory at End of Quarter	Consumption in Manufacture Reclaimed	Due on Contract at End of Contract
Reclaimers solely (7)	27,551	13,427	8,277
Manufacturers who also reclaim (16)	7,720	10,346	3,590
Other manufacturers (22)	279	.....	.....
Totals	35,550	23,773	11,867

NUMBER OF TONS OF CRUDE RUBBER CONSUMED IN THE MANUFACTURE OF RUBBER PRODUCTS AND TOTAL SALES VALUE OF SHIPMENTS OF MANUFACTURED RUBBER PRODUCTS

PRODUCT	Number of Tons of Crude Rubber Used	Total Sales Value of Shipments of Manufactured Rubber Products
Tires and Tire Sundries:		
Automobile and motor truck pneumatic casings	41,220	$109,903,000
Automobile and motor truck pneumatic tubes	10,473	18,814,000
Motorcycle tires (casings and tubes)	73	252,000
Bicycle tires (single tubes, casings and tubes)	120	527,000
All other pneumatic casings and tubes not elsewhere specified	.....	47,000
Solid tires for motor vehicles	3,765	6,876,000
All other solid tires	38	154,000
Tire sundries and repair materials	634	3,326,000
Totals	56,323	$139,899,000
Other Rubber Products:		
Mechanical rubber goods	3,149	$19,064,000
Boots and shoes	3,494	22,888,000
Insulating wire and insulating compounds	740	7,841,000
Druggists' sundries, medical and surgical rubber goods	582	3,105,000
Waterproof cloth, clothing and rubber sheeting	508	4,612,000
Hard rubber goods	565	2,044,000
Heels and solcs	1,224	4,082,000
Miscellaneous, not included in any of above items	1,522	5,306,000
Totals	11,784	$68,942,000
Grand Total—All products	68,107	$208,841,000

INVENTORY OF CRUDE RUBBER IN THE UNITED STATES AND AFLOAT FOR UNITED STATES PORTS

ON HAND	Long Tons: Plantation	Pará	All Other	Totals
Manufacturers	49,613	3,819	775	54,207
Importers and dealers	9,251	873	77	10,201
Totals on hand	58,864	4,692	852	64,408

AFLOAT	Long Tons: Plantation	Pará	All Other	Totals
Manufacturers	8,981	140	....	9,121
Importers and dealers	14,374	722	63	15,159
Totals afloat	23,355	862	63	24,280

[1] Number of rubber manufacturers that reported data was 219, crude rubber importers and dealers, 39; reclaimers (solely), 7; total daily average number of employes on basis of third week of April, 1924, was 141,894.

It is estimated that the crude rubber consumption figures are 90 per cent of the total and the crude rubber inventory figures 95 per cent of the total for the entire industry.

UNITED STATES EXPORTS OF CANVAS RUBBER-SOLED SHOES REACHED their highest figure for this year in March, surpassed only by the record for March, 1923. Totals are: March, 1923, 598,928 pairs, value $449,472; and March, 1924, 494,019 pairs, value $378,577. Figures also for April, 1923, were: 465,198 pairs, value $333,521. The leading purchasers during March, 1924, were: Cuba, taking 117,769 pairs, value $81,508; and England, 103,291 pairs, value $82,515. The Philippines bought 84,528 pairs, value $59,482.

Rubber Restriction and Effect of Price on Production

The following tables, compiled by Lewis & Peat, and published in *The Financial Times*, London, will give some idea of the effect on the amount of rubber exportable under the restriction plan in the event of the market following any one of the undermentioned courses.

The price of rubber having averaged under 1s. for the quarter May 1 to July 31, 1924, the amount exportable from British Malaya and Ceylon under the restriction plan will be reduced by 5 per cent every quarter commencing with August-October, until the price has averaged 1*s*, 3*d*. for one of the quarters, in which case the amount exportable will be increased by 5 per cent in the following quarter, and for each quarter afterwards (provided the price still averages 1*s*. 3*d*. each quarter). Should the price average 1*s*. 6*d*. for a quarter, the increase would be at the rate of 10 per cent.

It is understood that the quarters are as follows: November-January, February-April, May-July and August-October, and should the price average 1*s*. 3*d*. from, say, July to September, it would not count as a quarter.

The 100 per cent standard production has been taken at 335,000 tons, which was the figure for last year, and for calculation purposes 5 per cent has been reckoned as 16,000 tons per annum, or 4,000 tons per quarter. The prices taken in the following tables, are, of course, estimated.

The following table shows working of the scheme should the average price remain under 1*s*. 3*d*. until the end of April, 1925:

Average Price Per Quarter		Exportable allowance per quarter Per cent	Reduction per quarter Tons
May-July, 1924.....Under 1/–	Aug.-Oct.	55	4,000
Aug.-Oct., 1924.....Under ½	Nov.-Jan.	50	8,000
Nov.-Jan., 1924-25.....Under ½	Feb.-April	45	12,000
Feb.-April, 1925.....Under ½	May-July	40	16,000
May-July, 1925.....½ or over	Aug.-Oct.	45	12,000
Aug.-Oct. 1925.....½ or over	Nov.-Jan.	50	8,000
Nov.-Jan., 1925-26.....½ or over	Feb.-April	55	4,000
Feb.-April, 1926.....½ or over	May-July	60	....
Reduction 21 months			64,000

If the price is maintained at an average of 1*s*. 6*d*. for the quarter, August-October, 1925, and November-January, 1925-26, the percentage will be 55 per cent for November-January and 65 per cent for February-April, giving a reduction of export for the 21 months of 52,000 tons.

The following table shows the working of the scheme should the price remain under 1*s*. 3*d*. until the end of January, 1925:

Average Price Per Quarter		Exportable allowance per quarter Per cent	Reduction per quarter Tons
May-July, 1924.....Under 1/–	Aug.-Oct.	55	4,000
Aug.-Oct., 1924.....Under ½	Nov.-Jan.	50	8,000
Nov.-Jan., 1924-25.....Under ½	Feb.-April	45	12,000
Feb.-April, 1925.....½ or over	May-July	50	8,000
May-July, 1925.....½ or over	Aug.-Oct.	55	4,000
Aug.-Oct., 1925.....½ or over	Nov.-Jan.	60	....
Reduction 15 months—Aug., 1924–Oct., 1925			36,000

If the price is maintained at 1*s*. 6*d*. during May-July, 1925, percentage for August-October, 1925, will be 60 per cent, giving a reduction in 12 months of 32,000 tons.

Should the price remain under 1*s*. 3*d*. until the end of October, 1924, the scheme will work thus:

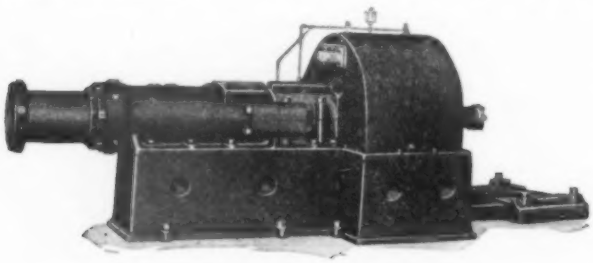
Average Price Per Quarter		Exportable allowance per quarter Per cent	Reduction per quarter Tons
May-July, 1924.....Under 1/–	Aug.-Oct.	55	4,000
Aug.-Oct., 1924.....Under ½	Nov.-Jan.	50	8,000
Nov.-Jan., 1924-25.....½ or over	Feb.-April	55	4,000
Feb.-April, 1925.....½ or over	May-July	60	....
Reduction 9 months—Aug., 1924–April, 1925			16,000

New Machines and Appliances

Largest Rubber Stock Strainer

THE rubber stock strainer here pictured is said to be the largest machine for the purpose ever built.

The machine embodies all the modern requirements as to quality and quantity production. The screw is cast steel, ground, polished and bored for steam and water circulation. The main bearing is of marine thrust type and all the other bearings are either roller or ball type. The gears are all steel, herringbone cut and run in an oil bath. All bearings are supplied with lubricant by means of a force pump. The feed hopper is of unusual proportions in order that masses of rubber may be fed to the machine without the need of special preparation.—The Adamson Machine Co., Akron, Ohio.

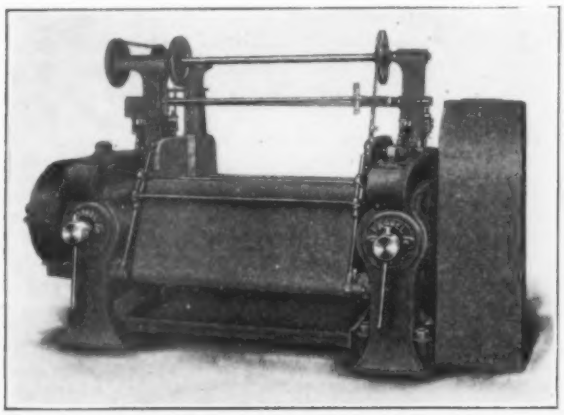


Adamson 12-Inch Rubber Strainer

Large Mill Mixing Apron

Mixing mill aprons have been familiar equipment for many years. The original hand operated mixing aprons are still supplied for mills below 60 inches roll face.

The front view of a mill with the latest design of air-operated apron for large mills is shown in the illustration. The advantages claimed for these aprons include: (1) considerable saving in time required to break down and combine rubber and dry compounds; (2) reduction of dust in the mill room; (3) less manual labor on the part of the operator; (4) marked reduction in time of mixing; (5) the power load is more uniform.



Farrel Air-Operated Mixing Apron

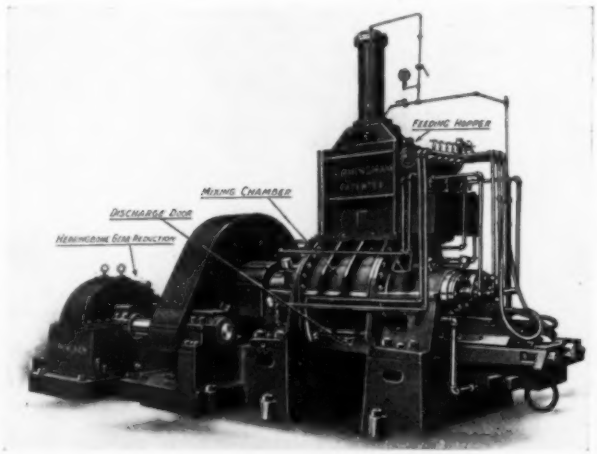
In operation, after the rubber is placed on the mill as usual, the apron is raised into the operating position pictured. It is set in motion immediately by contact with the rubber on the front roll. After breaking down the rubber the powders may be added as fast as desired.

That portion of the material which does not at first adhere to the rubber is caught by the belt and carried up over the top of the front roll and again passed between the rolls. This action is continuous until all of the compound has been taken up by the rubber. The apron is then dropped and the stock cut and turned back by the operator in the usual manner until the batch is thoroughly mixed.

The apron is fitted with safety trip bars of the latest type, controlled by an electric switch.—Farrel Foundry & Machine Co., Ansonia, Connecticut.

Heavy Duty Rubber Mixer and Masticator

The machine here illustrated is the newest and heaviest enclosed rubber masticator ever constructed. This huge machine weighs 75 tons without drive and is designed for continuous day and night duty in large plants requiring an enormous output of rubber stock. The construction is massive, rigid and simple, having fully in mind the conditions under which it has to be used.



No. 27 Banbury Mixer-Masticator

In one batch the mixer will take three bales of rubber, totaling about 600 pounds, and disintegrate and masticate it. When compounding rubber with filling powders the size of batch ranges from 700 to 1,000 pounds, depending upon the specific gravity of the stock.

The output for 24 hours is around 100,000 pounds of broken down rubber, depending upon the plasticity required. The output of mixed rubber will vary from 70,000 to 130,000 pounds per 24 hours, depending upon the nature of the stock mixed. It is claimed that the machine will displace from eight to twelve 84-inch mills, or twelve to eighteen 60-inch mills.

The saving in labor and horsepower is very large and the working conditions for the operator are very much improved because the machine is so equipped that very little manual work is needed. Every requirement for safety is fulfilled because all the working parts are fully enclosed.

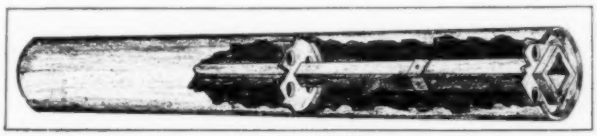
Operating control is facilitated by a special timing device, indicating by sight or sound when the batch has been worked suf-

ficiently. A softness indicator built into the machine indicates the softness of the rubber being broken down or mixed. Also a recording thermometer registers the temperature of the mixing and the time taken for each batch.—Birmingham Iron Foundry, Derby, Connecticut.

Seamless Tube Stock Shell

A new departure and improvement in metal calender shell construction is shown in the illustration herewith. This shell is made from hard tempered seamless tubing and will withstand the most severe service without damage. It is considerably lighter in weight than the usual metal shells, due to its construction. The square lengthwise guide and support for the calender bar comprises two ⅛-inch steel angles supported at the ends and in the center of the shell.

Intermediate between these supports the angles are strapped together by short pieces of riveted angle steel, spanning the joints



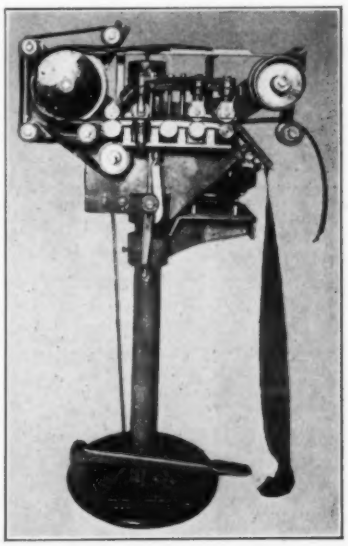
Patent applied for

Lowe Seamless Tube Calender Shell

in the angle tube. The use of a single internal bracing disk results in elimination of weight, while amply supporting the steel tube body of the shell. The entire construction is rigid and permits hard and continuous service and freedom from repair charges. —Clyde E. Lowe Co., 2976 East 81st street, Cleveland, Ohio.

Clincher Bead Flipping Machine

The picture here shown illustrates a triple-purpose machine for tire bead building. It will flip clincher beads in long continuous lengths; take clincher bead filler from a reel or roll and cut it into lengths of correct circumference to lay in the tire and covering it with flipper strips; and splice both filler and cover at different points, thereby greatly reinforcing the bead structure.



Utility Clincher Bead Flipper

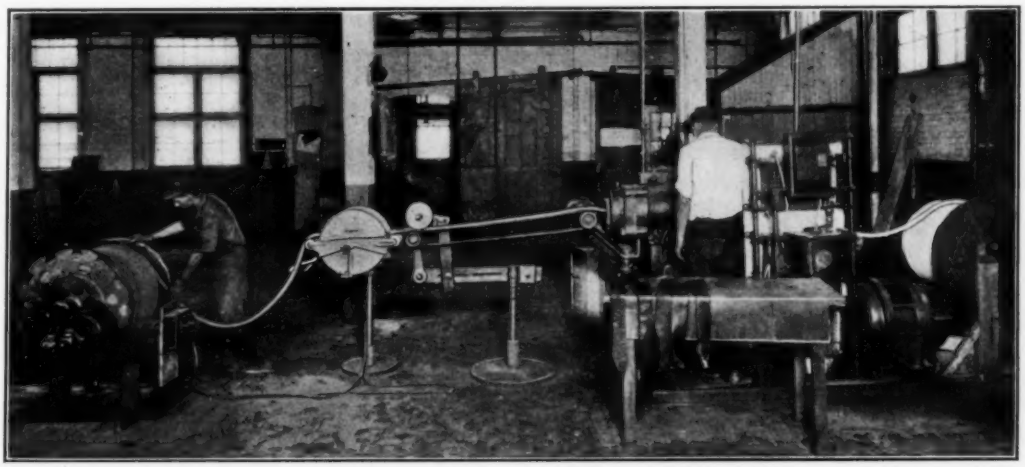
The machine will take, also, an endless molded clincher bead and cover it with flipper strip, maintaining its circumference with the skirt extended at the proper angle to lay in the tire. The measuring wheels are adjustable over a sufficient range to cover all variations that tire makers may desire. The machine is opened to release the bead by one-third turn of the crank. It is motor-driven and furnished with motor and starter built in the machine.—Utility Manufacturing Co., Cudahy, Wisconsin.

Automatic Machines for Garden Hose Manufacture

The series of automatic machines here pictured form a labor-saving combination designed for facilitating the manufacture of garden hose. The apparatus includes a belt conveyor or apron, the speed of which is regulated to that of the output delivered by the tubing machine.

If it is preferred to employ a liner, a lining spreader may be easily substituted in place of the outside soapstoning machine.

The automatic features in this combination of reel, soapstoner and hauling apron or conveyor permit its operation by two men only, the one who feeds the tubing machine and the one who changes the reels, in place of five men required ordinarily, employed for accomplishment of the same work.—H. Monroe Smith, Passaic, New Jersey.



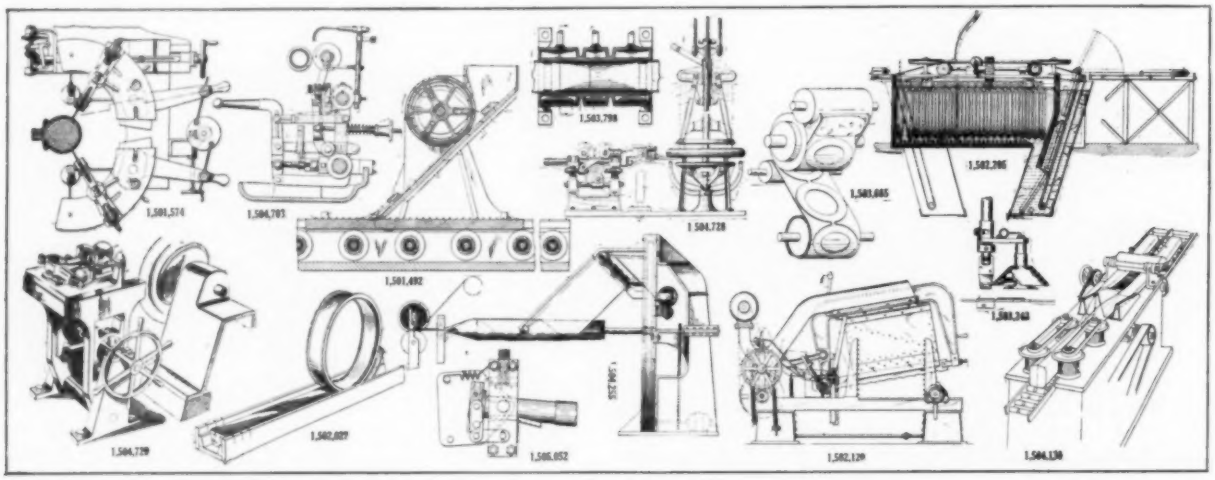
Automatic Hose Reel, Soapstoner and Apron

The rubber covered hose passes through the automatic soapstoner and is wound on the automatic reel. The speed of the latter is regulated by an electrically operated attachment between the soapstoner and the reel.

Machinery Patents

The United States

(1,501,492). METAL INSERT FEEDING MACHINE. Cup-shaped metal pieces, placed in bulk in the hopper, are fed individually in rows through guide chutes and placed upon individual pins or holders in a multiple compartment mold in which the inserts are to be covered with rubber. The discharge of the pieces in correct position is regulated by an enclosed paddle wheel at the outlet of the hopper. The pieces descend the chutes by gravity and are picked off by the mold pins passing tangentially to the base of the chutes as the mold to be loaded passes below on a series of rollers. —W. D. Kmentt, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,501,492.



(1,501,574). FABRIC-LAYING ATTACHMENT FOR TIRE-MAKING MACHINES. An attachment of dual construction to be applied to a tire-making machine for laying down the fabric on the tire core. At one end of the tool arm is a steel roller with relatively thin edge and at the opposite end a roller having a comparatively wide edge of vulcanized rubber. The first lays down fabric around the tire bead, while the second lays the fabric over the body of the core.—John E. Thropp, assignor to The DeLaski & Thropp Circular Woven Tire Co., both of Trenton, New Jersey. United States patent No. 1,501,574.

(1,502,027). METHOD OF MANUFACTURING CUSHION TIRES. Tubed cushion or solid-tire stock is severed into requisite lengths, and applied to the carrying rims. The cut and weighed rubber strips are placed in a trough marked to indicate exact lengths. The prepared rim is then rolled over the strip picking it out of the trough, and the operator, using blunt-edge tools, crowds the ends of the rubber strip together by pressure.—F. D. Fowler, assignor to Hood Rubber Co., both of Watertown, Massachusetts. United States patent No. 1,502,027.

(1,502,120). MACHINE FOR CUTTING RUBBER. The essential features comprise feeding water into the cut made by the cutting blade and spreading the rubber away from the blade. A thin fountain attached to the reciprocating frame supplies the water intermittently. As the blade and fountain advance the rubber is spread apart by the fountain.—C. Rasmussen, assignor of one-half to R. T. Ingalls, both of Racine, Wisconsin. United States patent No. 1,502,120.

(1,502,205). CONTINUOUS VULCANIZING APPARATUS. This comprises two horizontal tank vulcanizers, separated by a wall for the continuous vulcanization of tires. Iron molds enter the tank from one end and are fed continuously to the opposite end where they are removed by passing downward into an inclined extension of the tank, from the bottom of which they are elevated by a conveyor to a table for opening and removal of the tires.

The heat for vulcanizing is supplied by a liquid having sufficiently high boiling point so that it may be maintained at a vulcanizing temperature without material evaporation. Paraffin is a very suitable material for this purpose.—Lee R. McGuire, assignor to Morgan & Wright, both of Chicago, Illinois. United States patent No. 1,502,205.

(1,503,242). CIRCULAR FEED ATTACHMENT. A sewing machine device for feeding and sewing reinforced ankle patches of leather to canvas shoes comprises a stitch-forming mechanism, straight-line work feed combination and a circular rotatable work gripper. —Thomas B. Huestis, assignor to National India Rubber Co., both of Bristol, Rhode Island. United States patent No. 1,503,242.

(1,503,665). APPARATUS FOR MAKING ANNULAR SHEETS OF RUBBER. Sheets in annular shape ready for use with annular forming molds are produced in a three-roll calender, the middle roll of which is arranged with cavities to produce the calendered sheet in annular form. Means are provided to take care of the annular sheets and wind them on a roll ready for use.—Fred T. Roberts, Cleveland, Ohio. United States patent No. 1,503,665.

(1,503,798). TUBE VULCANIZING DEVICE. A separable cylindrical mold for receiving the ends of an inner tube telescoped and cemented for curing the joint. The mold has a central steam jacket for supplying curing heat, and at either end water-cooled zones are provided. Rubber rings at the ends of the mold engage the tube when held under pressure and prevent its longitudinal expansion by the friction of the tube against the cooled zones of the mold.—Joseph G. Mooney, assignor to Mary H. Mooney, both of Erie, Pennsylvania. United States patent No. 1,503,798.

(1,504,130). MANUFACTURE OF SOLID RUBBER TIRES. A tubed double solid tire strip is cut apart into two single tire strips in a power-driven machine, the double strip riding forward on a roller bed held in cutting position between vertical spindles as it advances to a circular cutting knife. The cut single tires are turned base upward by a guiding device and advance out of the machine on the roller bed by the pulling action of an adjustable friction roller which bears upon the pair of single tires.—Colin Macbeth and Harry Willshaw, Birmingham, England, assignors to The Dunlop Rubber Co., Limited, Westminster, London, England. United States patent No. 1,504,130.

(1,504,255). MACHINE FOR MANUFACTURING BIAS FABRIC. Use of a bias cutter and splicing is dispensed with by a method of winding and slitting. The rubberized fabric is led directly from

the roll and in a single operation is formed into a bias strip spliced together end to end. The fabric roll is mounted on a rotating ring from which it is led on a vertical cylinder at an angle of 45 degrees with a slight overlap determined by amount desired at the splices. The wrapping of fabric is advanced in time relation with its speed of winding by endless chains or belts surrounding the cylinder and underlying the fabric. Inner and outer pairs of circular cutting knives split the fabric at the lower conical terminus of the cylinder and the bias strips are diverted to either side and rewound.—F. J. MacDonald, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,504,255.

(1,504,703). KNIFE FEEDING MECHANISM FOR RUBBER AND FABRIC CUTTING MACHINES. Rubber rings are cut from a tube mounted upon a rotating mandrel, and adapted to be intermittently engaged by a circular knife mounted upon a carriage, which is intermittently fed lengthwise of the mandrel.—William Nicholas, assignor to the Black Rock Manufacturing Co., both of Bridgeport, Connecticut. United States patent No. 1,504,703.

(1,504,728). CORD-TIRE BUILDING MACHINE. This machine comprises a series of duplicate mechanisms which are simultaneously operated to apply a continuous layer of cords upon the periphery of a tire forming core. In conjunction with the building mechanism is one for removing the core from the supporting table. —Knut O. B. Textorius, assignor to Tex Engineering Corporation, both of New York, N. Y. United States patent No. 1,504,728.

(1,504,729). TIRE BUILDING MACHINE. A tire building machine in which the stitcher supporting carriage moves toward or from the core, and in both directions if desired, under the influence of gravity. A central horizontal shaft may be rocked to and from the core by a hand-wheel or power.—Roland S. Trogner, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,504,729.

(1,505,052). MANDREL SUPPORT. A pair of plates secured to any suitable support and carrying a pair of trunnions and framework for two socket plates adapted to receive the end of a mandrel. In the rear a pair of links operated by the downward tilting mandrel held in the socket plates cause a cushioned block to close the end of the mandrel, thus preventing the escape of air pressure used to blow a tube from the mandrel.—George L. Mather, Milwaukee, assignor to The Federal Rubber Co., Cudahy, both in Wisconsin. United States patent No. 1,505,052.

Other Machinery Patents

Germany

Design Patents Issued, With Dates of Issue

875,201 (March 14, 1921). Apparatus for recovering solvents from fabrics, particularly rubberized fabric. The Dunlop Rubber Co., Limited, London; represented by Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, Frankfurt-am-Main, and T. R. Koehnhorn and E. Noll, Berlin S. W. 11.

875,960 (May 8, 1924). Device for attaching rubber or leather heels. Gustav Pape, Zittau, i. S.

876,609 (May 23, 1924). Water cooled rolls. A. G. Metzeler & Co., Munich.

876,761 (May 28, 1924). Apparatus for pressing together the beads on automobile tires. Max Kath, Advokatenweg 15 a, Halle a. d. S.

876,928 (May 13, 1924). Hydraulic press for vulcanizing tires. A. G. Metzeler & Co., Munich.

877,044 (June 3, 1924). Vulcanizing apparatus for repairing tubes of motorcycles and bicycles. Albert Ruof, Esslingen, a. N.

Patents Issued, With Dates of Issue

397,113 (August 20, 1922). Spreading machine for making rubber sheets or bands. Albert Baerler, Malmö, Sweden; represented by: R. Specht. Hamburg.

397,250 (March 10, 1923). Vulcanizing apparatus. Robert Hoffmann, Vienna; represented by: Emil Thiel, Waltersdorf bei Erkner.

397,640 (May 29, 1923). Mill for washing crude rubber. Hans Odenwald, Hannover-Limmer.

397,918 (March 27, 1923). Dipping apparatus for making seamless rubber goods. Ernst Hurlbrink, Bachstrasse 2, Berlin.

398,235 (March 5, 1922). Device for pressing treads. Jacobus Spyker, Amsterdam, Holland; represented by: Dr. A. Mestern, Berlin S. W. 48.

398,429 (September 9, 1922). Press mold in several parts, for molding hard rubber in tin foil. John Hubbard, Essex, and Philip Crouch, London, England, represented by: F. Meffert and Dr. L. Sell, Berlin S. W. 11.

398,732 (November 20, 1921). Apparatus for preparing rubber from latex. Roa, Limited, London; represented by: Dr. Karsten and Dr. C. Wiegand, Berlin S. W. 11.

398,942 (December 23, 1923). Rubber spreading machine. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

399,932 (March 11, 1923). Machine for stretching and mounting tires. Albert Schulz, Zinzendorferstrasse, Dresden.

400,463 (August 23, 1922). Vulcanizing apparatus for joining the ends of tubes. Fleming & Cie., G. m. b. H., Charlottenburg.

Austria

Patent Published May 15, 1924

A3,227-23 Rubber spreading machine with device for controlling electrical charges. H. Schmidt, Köln-Riehl, Germany.

Process Patents

The United States

1,501,009 TENNIS BALL. A ball is first formed in a mold by the usual sponge rubber process, and of weight of the ordinary tennis ball. The ball so made is dipped into a rubber cement into which has been incorporated a percentage of cotton or wool flock. Before this coating has fully dried the ball is placed in a tumbler with loose wool flock for addition to the cemented surface. The ball is then removed and the cement surface vulcanized. The slight compression received in the mold serves to compact the flock and insures a smooth and durable wearing surface.—Thomas W. Miller, assignor to the Faultless Rubber Co., both of Ashland, Ohio.

1,507,786 METHOD OF MAKING SOLID TIRES. The tendency of vulcanized rubber to chip, peel, or break off in fragments is obviated by submitting the calendered sheet of raw rubber, about to be built into a solid tire, to slitting, gashing, gouging, perforation or similar operation at numerous closely adjacent points more or less transverse to the length of the strip, thus interrupting the continuity of the grain. When vulcanized in a mold the gashed fibers join in new unions which break up their original continuity without impairing the strength of the finished article. The grain is thus permanently destroyed, which is the desired result.—Walter H. Allen, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,501,791 The process of making expanded rubber. C. L. Marshall, London, England.

1,503,432 Method of manufacturing self-cooling tires. K. Schragin, Berlin, Germany.

1,503,667 Method of making hollow rubber articles. W. E. Roberts, Andover, Mass.

1,503,701 Patch and method of making the same. H. A. Morton and M. H. Harrison, assignors to The Miller Rubber Co., all of Akron, Ohio.

The Dominion of Canada

241,512 Method of manufacturing hollow rubber articles. J. L. Kelly and C. F. Fenlason, Jr., co-inventors, both of Malone, New York.

241,591 Method of manufacturing tennis balls. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, Canada, assignee of H. F. Mitzel, Providence, Rhode Island, U. S. A.

241,617 Process of making cushion tires. The O. & W. Co., New York City, New York, assignee of E. Nelson, Belleville, New Jersey, both in U. S. A.

241,618 Process of making tires. The O. & W. Co., New York City, New York, assignee of E. Nelson, Belleville, New Jersey, both in U. S. A.

241,848 Method of forming tires. The Fisk Rubber Co., Chicopee Falls, Massachusetts, assignee of W. G. Fording, Cleveland, Ohio, both in U. S. A.

The United Kingdom

215,903 Method of ornamenting rubber. J. L. Hancock, Ltd., and H. Rogers, 266 Goswell Road, London.

216,072 Method of making pneumatic tires. S. H. Wood, 11 Great Stanhope street, London.

217,401 Process of coating with rubber latex the seams of cotton or jute bags. C. C. Loomis, 185 Valentine Lane, Yonkers, and G. E. Perry, 145 Henry street, Brooklyn, both in New York, U. S. A.

217,460 Method of attaching and reinforcing crêpe rubber soles. E. F. Kempton, 332 St. Saviour's Road, East, Leicester.

Germany

Patents Issued, With Dates of Issue

398,374 (July 10, 1920). Method of making tires. Ernest Hopkinson, New York; represented by: R. H. Korn, Berlin S. W. 11.

398,382 (August 9, 1922). Method and apparatus for making rubber shoes. Ivan K. Wetrensky, T. Bazardjik, Bulgaria; represented by: Dr. R. Geissler, Berlin S. W. 11.

398,430 (May 11, 1922). Method of making cold vulcanized hollow rubber goods out of rubber solution. Fordyce Charles Jones, London; represented by: A. Elliot, Berlin S. W. 48.

398,733 (November 9, 1921). Method for producing permanent gloss on rubber goods by applying powdered mica. Louis Minton, Manchester, England; represented by: Dr. R. Geissler, Berlin S. W. 11.

399,208 (September 11, 1923). Process for protecting rubber packing and rubber tubes against chemical changes caused by liquids. Karl Ludwig Lanninger, Frankfurt-am-Main, Rödelheim.

The Editor's Book Table

Book Reviews

"THE RUBBER CONFERENCE, BRUSSELS, 1924, BEING THE Official Report of the International Rubber Conference held in Brussels in April, 1924, Together with the Papers Read and the Discussions Thereon." Published and copyrighted by The Rubber Growers' Association, Inc., 2/4 Idol Lane, London, E. C. 3, England. Cloth, 218 pages, 6 by 10 inches.

THE various papers read at the Brussels Conference, April 1, to 16, 1924, are in this volume quoted in full, the names of the writers including those prominent in the different branches of the rubber industry. At this conference, as part of the Sixth International Exhibition of Rubber and Other Tropical Products, there were present as delegates representatives of the rubber industry from Great Britain, Belgium and Belgian Congo, Brazil, the French Colonies, and the Netherlands Indies, as well as from other parts of the world.

"WHAT'S THE MATTER WITH RUBBER?" BY RUDOLF A. Clemen, of the Illinois Merchants' Trust Co., Chicago, Illinois.

This publication is divided into three parts: (1) American Rubber Manufacture; (2) The Export Rubber Trade; (3) Our Crude Rubber Supply. The facts as to the industry have evidently been carefully studied and are clearly presented and the material is conveniently arranged.

"THE TIMES OF CEYLON GREEN BOOK—1924." PUBLISHED BY The Times of Ceylon Co., Limited, Colombo, Ceylon. Cloth, 1195 pages, with index, 5½ by 8½ inches.

Several new features are included in the 1924 edition of this well-known publication, which as usual contains among its many items a full account of the Ceylonese rubber industry. The statement is made that there are now about 400,000 acres in Ceylon under rubber, the leading districts being Kalutara, the Kelani Valley and Sabaragamuwa, while rubber is also being grown successfully in other sections of the island. The volume under consideration is well indexed, while an excellent map is a useful feature.

"OFFICIAL AMERICAN TEXTILE DIRECTORY—1924." COMPILED annually by The Textile World, published by Bragdon, Lord & Nagle Co., New York, N. Y. Cloth, 1067 pages, 6 by 9 inches.

This 1924 edition of a useful publication, conveniently arranged in six parts, contains as usual a great deal of data of interest to the textile and other industries. One of this year's new features is a list of investment and brokerage houses handling textile mill securities. The names of textile manufacturing establishments in the United States and Canada are arranged both geographically and alphabetically, while the volume contains some useful maps.

"MALAYAN AGRICULTURE, 1924—HANDBOOK COMPILED BY THE Department of Agriculture, F. M. S. and S. S." Printed by Fraser & Neave, Limited, Singapore, S. S. Paper, illustrated, 301 pages, 5 by 8½ inches.

This volume was first compiled at the request of the Acting Director of Agriculture, Federated Malay States and Straits Settlements, in connection with the Agricultural Section of the Malaya-Borneo Exhibition, on the occasion of the visit to Malaya of the Prince of Wales, and is now being published in a revised form for use at the British Empire Exhibition. Each of the publication's twelve chapters is devoted to an account of one of Malaya's agricultural products, a special section being given to the rubber industry. Some important statistics and notes concerning the coagulation of Hevea latex are of especial interest.

"PNEUMATIC TIRES," "CRUDE RUBBER AND COMPOUNDING INGREDIENTS," and "RUBBER MACHINERY," by Henry C. Pearson, cover these subjects in a comprehensive and authoritative manner.

New Trade Publications

THE 40TH ANNIVERSARY NUMBER OF THE INDIA RUBBER JOURNAL, commemorating the establishment of that periodical in 1884, is almost bewildering in its comprehensiveness, as its many articles review the whole history of the rubber industry. The issue is arranged in two parts, more than thirty-five articles dealing with various phases of the industry being included in the first section, while the Rubber Growing and Marketing Section contains fourteen articles. With such a wealth of material and so many authorities contributing, it is unnecessary to particularize except to state that in these various articles all branches of the industry appear to be covered, also the rubber industry of Poland, Latvia, Australia, Japan, Italy, and Holland.

IN THE YEAR BOOK FOR 1924, ISSUED BY THE AMERICAN ENGINEERING STANDARDS COMMITTEE, 29 West 39th street, New York, N. Y., the work of the organization during the post-war period is reviewed, as well as the methods of procedure followed in cooperating with the United States Government and also with foreign standardizing bodies. Among the various projects of interest to the rubber industry is a safety code for rubber machinery, the code being sponsored by the International Association of Industrial Accident Boards and Commissions, and also by the National Safety Council. Another project, sponsored by ten organizations, has reference to insulated wires and cables. The aims of the Engineering Standards Committee, in its efforts to promote greater industrial efficiency, are set forth in a supplementary booklet entitled "Standardization—What It Is Doing For Industry."

A LITTLE ILLUSTRATED BOOKLET ENTITLED "THE USE AND CARE of Pneumatic Tires" is published by the Fankell Tire Co., 124 West 14th avenue, Denver, Colorado, one of the distributers of the Seiberling line of casings. In this bulletin is included some useful advice regarding the treatment of tires, while another section is devoted to reviewing the traffic regulations of Denver. The new 90-day warranty of pneumatic tires, as prepared by The Rubber Association, is also quoted in full.

AN ILLUSTRATED BULLETIN ENTITLED "MAKING MONEY FOR THE Dealer" is being sent out by The William Tire Co., Akron, Ohio. Included in this booklet are not only certain testimonial letters from dealers connected with the organization, but also representations of the company's plant, both exterior and interior.

PRODUCTS OF THE CINCINNATI RUBBER MANUFACTURING CO., Cincinnati, Ohio, which include various kinds of hose, tubing, and packing, are listed in an illustrated bulletin entitled "Automotive Accessories." Included in this publication is a standard price list of automobile brake band linings.

THREE ILLUSTRATED BULLETINS ARE BEING SENT OUT TO THE trade by the Morse Chain Co., Ithaca, New York. Two of these, entitled "A Chain of Evidence" and "A Chain of Testimonials," contain accounts of installations and letters from industrial organizations who are now satisfied users of the Morse equipment. The third bulletin, entitled "Power, Its Application from the 17th Dynasty to the 20th Century," includes some curious and valuable historical data regarding the early utilization of power.

IN THE DEVELOPMENT OF SCIENTIFIC ROAD-MAKING THE IMPORTANT part being played by rubber is indicated in a little bulletin published by Rubber Roadways, Limited, 2/4, Idol Lane, London, E. C. 3, England. The booklet is entitled "The Dawn of a New Era; Rubber—Roadways, Pavements, Platforms, Stairways," and the various types of experimental blocks and caps used since 1915 are listed as follows: "Dessau" Rubber Capped Wood Paving Block; Rubber and Metal Cap, All-Rubber Block, Rubber and

Expanded Metal Cap, and All-Rubber Block, all four manufactured by The Leyland & Birmingham Rubber Co., Limited; the "Cresson" Rubber Block; the Caulfield Rubber-Concrete Block; Cowper Rubber Blocks; Gaisman Rubber Blocks; Novocretes Rubber-Concrete Block; Read Patent Rubber Cap; and the Rubber and Concrete Block manufactured by The North British Rubber Co., Limited.

AN ATTRACTIVELY PREPARED BULLETIN ENTITLED "HARD RUBBER Storage Battery Parts and Accessories" is being published by the United States Rubber Co., 1790 Broadway, New York, N. Y. The many illustrations represent battery jars, battery containers and parts, covers, separators, plate forming tanks, pipe and fittings, nuts, faucets, washers, etc. Mention is also made of "Paravar" hard rubber varnish, which is manufactured by the United States Rubber Co., and which some battery manufacturers are using for painting battery boxes.

AN ILLUSTRATED BULLETIN ENTITLED "YARWAY BLOW-OFF Valves" is being sent out by the Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pennsylvania. Among its various products the company makes a specialty of seatless valves, and in the catalog referred to are shown examples of typical installations at certain well-known plants.

THE AUGUST ISSUE OF "NUMBER FORTY," THE HOUSE ORGAN of The Faultless Rubber Co., Ashland, Ohio, contains not only descriptions of the company's chief products, with illustrations in color, but also an account of the awarding of a diploma of honor to the Faultless organization at the recent Brussels International Exposition. It should be noted that the conferring of this diploma by the Exposition authorities represented the only official recognition on that occasion granted to an American rubber manufacturer.

AN ILLUSTRATED BULLETIN ENTITLED "SAFETY IN THE RUBBER Mill" is being sent out to the trade by The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin. The publication includes descriptions of various safety devices and requirements, while photographs represent Cutler-Hammer magnetic clutch-brakes as installed at the plants of certain leading rubber companies.

FULL INFORMATION REGARDING THE LATEST REGULATIONS AS to appraisals for Federal tax purposes are contained in a new booklet being issued by the well-known engineering organization, Lockwood, Greene & Co., 100 East 42nd street, New York, N. Y. This publication, entitled "Retrospective Appraisals," should be of value in solving certain tax problems connected with industrial properties.

SOME INTERESTING FACTS REGARDING THE COTTON INDUSTRY OF the South are included in a recent issue of "The Weather Vein," the house organ of the Carrier Engineering Corporation, specialist in air conditioning and drying, with offices at 750 Frelinghuysen avenue, Newark, New Jersey. According to this little bulletin, the South in 1881 had but 5 per cent of the country's cotton spindles, while New England had 81 per cent. In October, 1923, the New South was actively operating 16,084,942 spindles, while New England had only 16,579,516 at work. Due to the milder climate of the South the air in the mills can be more easily conditioned than in the factories of the North.

STANDARD SPECIFICATIONS ENDORSED BY THE ASBESTOS BRAKE Lining Association, 17 West 42nd street, New York, N. Y., appear in a bulletin published by the Thermoid Rubber Co., Trenton, New Jersey, entitled "Brake Lining, Clutch Facing, Radiator Hose and Thermoid-Hardy Disk Sizes Used on Automobiles, Trucks, and Tractors, 1924."

WITH THE NEEDS OF THE MOTORIST IN MIND THE DUNLOP TIRE & Rubber Goods Co., Limited, Toronto, Canada, has prepared an attractively illustrated booklet entitled "The Dunlop Trail (Ontario) For the Motorist." A number of maps and detailed data as to hotels, camp sites, distances from point to point, etc., add to the usefulness of the publication.

Recent Articles Relating to Rubber

Note on the Accelerating Influence of an Azo Dye in Vulcanization. The authors' investigation indicates that the dye employed, which was that obtained by coupling diazotized 2-naphthylamine-1-sulphonic acid with B-naphthol, acts as a very feeble accelerator in non-accelerated mixes.—T. J. Drakeley, A. Zeitlin, and L. H. Williams. *Journal of the Society of Chemical Industry*, July 18, 1924, 238T.

Historical Account of Rubber Footwear. Shoe types, compounding, machine and hand operations, shoe varnish, value of reclaim in shoe stocks. The Russian type of shoe. Anonymous. *The India-Rubber Journal*, August 2, 1924, 137-142. Illustrated.

The Acceleration of Vulcanization. All accelerators require soluble zinc in order to produce the best physical properties, also in stocks containing the same accelerator the chemical cure is no index of the physical properties. The production of maximum physical properties seems to be dependent upon the formation of a zinc-accelerator compound. Such a compound has not been isolated in any case, except with the mercapto accelerators, where it is believed to be the zinc salt of the accelerator. Some accelerators, such as diphenyl guanidine and dimethylaminodimethyl dithiocarbamate, are able to react directly with zinc oxide in order to form the necessary zinc-accelerator compound, while others are dependent upon the presence of a rubber-soluble zinc salt, either formed by the reaction of the resin acids on zinc oxide or added directly to the mix.—L. B. Sebrell and W. W. Vogt. *Industrial and Engineering Chemistry*, August 1924, 792-797.

Relation Between Elastic After-Effect and Temperature in Raw and Vulcanized Rubber. (German)—*Kolloid-Zeitschrift*, July 1924, 40-47. Illustrated. Graphs and Tables.

Refractive Index of Rubber.—D. F. Twiss. *Nature*, 1924, 822.

The Trend of Development in Rubber Machinery. Discusses possible development of machinery in its future application to the rubber industry under the headings, (1) general engineering plant, (2) standard rubber plant, (3) special process plant, (4) labor saving machinery.—H. C. Young. *The India Rubber Journal*, August 2, 1924, 169-184. Illustrated.

The Mechanism of Abrasion. Discusses the results of Grieder and on the basis of the spheroidal theory of rubber particles suggests that abrasion is affected by two main factors: (1) the energy which can be absorbed without rupture on extension, (2) the energy which can be absorbed without rupture on compression.—R. W. Lunn. *The India-Rubber Journal*, August 2, 1924, 144-146. Graph.

The Evolution and Physics of the Golf Ball. Early history and progressive development of golf ball construction. Outline of modern method of manufacture and testing. Effect and capacity of spin, concentration of weight at center, compressibility and resilience.—Charles L. Abernethy. *The India-Rubber Journal*, August 2, 1924, 127-133. Illustrated.

Making Golf Ball Molds. Descriptive.—Gustav Drews. *Industrial Gas*, August, 1924. Illustrated.

Vulcanization and Accelerators. Part I. Theory of Vulcanization. Serial. History of vulcanization and chemical theories of the process.—André Dubosc. *The Rubber Age*, New York, June 25, 1924, 219-21; July 10, 1924, 259-61; July 25, 1924, 305-6; August 10, 1924, 344-5.

Effect of Accelerators on Sodium Silico-Fluoride Coagulated Rubber.—H. P. Stevens. *Bulletin of the Rubber Growers' Association*, July 1924, 446-8.

Latex and Rubber of Transplanted Trees. Adverse external influences, such as bad tapping, pollarding, mutilation of the roots, or neglect of the soil, have very little effect on the quality of the rubber produced by Hevea trees.—O. de Vries, Communications, Central Rubber Station, Buitenzorg, Java, 1923, 37, 20 pages, *Archief voor de Rubbercultuur*, 1923, 7, No. 11.

Rubber from Buddings. Variability of Rubber from Individual Buddings Compared with Rubber from Seedlings. The rubber from individual seedlings in one plot exhibited wide variability, whereas rubber from individual buddings from one mother tree showed much smaller variation. The latter rubber possessed the low tensile strength, low viscosity, and high slope characteristic of the product of young trees, but its rate of vulcanization was normal and not as great as is commonly observed for rubber from young seedlings.—O. de Vries, Communications, Central Rubber Station, Buitenzorg, Java, 1923, No. 38, 19 pages, *Archief voor de Rubbercultuur*, 1924, 8, No. 3.

Variability in the Plasticity of Crude Rubber. Description of method of testing crude rubber with the plastometer described in *Giornale di Chimica Industriale ed Applicata*, July, 1923. The variability of the usual types of crude rubber does not cause serious inconvenience during manufacture, although different types of crude rubber vary considerably as to plasticity.—B. Marzetti, *Giornale di Chimica Industriale ed Applicata*, June, 1924, 277-279. Graph; diagram; table.

Recent Vulcanization Processes. Chronological tabulation of recent patents relating to vulcanization, including inventors' names, patent numbers, date and brief description of each.—Dr. S. Halen. *Kunstaffe*, July, 1924, 98-101.

Contribution to the Study of the Vulcanization of Rubber in the Form of Sol and Gel. I. Experimental and theoretical study of hot vulcanization of rubber solutions.—F. Boiry. *Le Caoutchouc et La Gutta-Percha*, July 15, 1924, 12257-62. Tables. Part II. August 15, 1924, 12269-74.

The Regeneration of Vulcanized Rubber. Vulcanization is accompanied by two different phases. First, rubber undergoes a physical change of structure at the same time that it absorbs sulphur; second, the rubber resumes its original structure and combines chemically with the sulphur.—A. Dubosc. *Le Caoutchouc et La Gutta-Percha*, July 15, 1924, 12262-12263.

Dynamometer, System Pierre Breuil. I. Detailed description. *Le Caoutchouc et La Gutta-Percha*, July 15, 1924, 12269-12274. Illustrated. Part II. August 15, 1924, 12307-10.

Formulæ for Mixings. Formulæ for factories; colors; mixings for the different parts of footwear.—Dr. R. Ditmar. *Le Caoutchouc et La Gutta-Percha*, August 15, 1924, 12299-12301.

The Rubber Particle. Description of the apparatus designed and used by Dr. E. Hauser for investigating the rubber particle. —Philip Schidrowitz. *The India Rubber Journal*, August 9, 1924, 455-6. Illustrated.

Permanence of Paper Sized Into Rubber Latex.—J. Beckering-Vincers. *Papier-Fabrikant*, 1924, 22, 217-219.

Contributions to the Knowledge of the Vulcanization Problem. This detailed study concerns the colloidal changes in rubber due to sulphur vulcanization and to magnesia used as accelerator. The introduction treats of the physical and chemical aspects of vulcanization, vulcanization anomalies, and magnesia acceleration. The scientific technical main portion deals with the influence of magnesia on rubber as colloid chemical reaction, of sulphur vulcanization with magnesia acceleration as colloid-chemical phase reactions, and of the relations between the elastic properties and the chemistry of the sulphur vulcanization and magnesia acceleration.—H. Feuchter, *Kolloidchemische Beihefte*, Vol. 19, Nos. 1-3, p. 47 and following.

Automobile Tubes and Their Manufacture. Chief requirements in tubes are noted and suggestions for answering them are given. —*Gummi-Zeitung*, July 11, 1924, 821-822. Diagram.

Hydraulic Presses in the Rubber Manufacturing Industry. Description of presses with heated plates, multiple tiered presses, hydraulic rubber press for making hollow goods, autoclave presses with side opening, and so-called goose-neck press.—C. Walther, *Gummi-Zeitung*, July 25, 1924, 878-881. Illustrations.

Use of the Schopper Testing Apparatus to Measure the Adhesive Strength of Rubberized and Rubber Coated Cloths. Description of this method of testing the adhesion of rubberized fabrics consisting of two layers of cloth or of a rubber and a cloth layer.—Lothar Hock, *Kolloid-Zeitschrift*, July, 1924, 47-48. Illustration.

New Ideas on the Chemical Composition of Rubber. Review of work done in this connection during the last few years and a discussion of the results obtained.—Paul Bary, *Revue Générale des Colloïdes et de leurs applications industrielles*, June, 1924, 170-175. References, formulæ.

Interesting Letters from Our Readers

Wet Native Rubber Not Considered in Statistics

To THE EDITOR:

DEAR SIR: Regarding the statistics of the exports from the Dutch East Indies and Malaya published in your May issue on page 548, we have come to the conclusion that they do not give a true picture of the actual position, due to the fact that no consideration has been made in regard to the percentage of moisture of the wet native rubber imported into Singapore.

The net export for Malaya for 1923 is generally accepted as 183,811 tons, which is obtained by deducting foreign import of 68,203 tons from the gross export of 252,014 tons. It is also well known that this import, to a very large extent, probably 75 to 85 per cent, consists of wet native rubber containing from 10 to 50 per cent moisture, but as no reservation in this respect is made in the official figures you will realize that the actual quantity of exportable rubber will be less than the imported quantity, whereby the actual net export from Malaya will be correspondingly higher.

We estimate the loss in weight on the wet rubber imported at about 11,000 tons, which would mean that the net export from Malaya for 1923 would aggregate about 195,000 tons instead of the 183,811 tons mentioned above.

It must furthermore be assumed that the Dutch figures for export are also based on gross weight, wherefore the above will correspondingly reduce the net export from Dutch Indies to about 127,000 tons.

The total figures for the two places will of course remain unchanged, but the above will alter to some extent the comparative figures between the increase and decrease of exports between the two countries, although the alteration cannot be fixed at the above mentioned 11,000 tons owing to the fact that the figures for 1922, though not to the same extent on account of smaller import to Singapore, are also misleading.

The places from which the native rubber principally are imported are Djambi, Palembang, Riouw, Atjeh and Dutch Borneo.

Singapore, S. S. THE EAST ASIATIC CO., LTD.
H. M. Arstin, Acting Manager.

TESTS ON AUTOMOTIVE HIGH TENSION WIRE

Tests are being made by Underwriters' Laboratories in connection with "corona," a glow due to the presence of ozone generated around the rubber covering of high-tension wire. The ozone, in attacking this covering, causes it to disintegrate, resulting in bare wires and consequent short circuits. The department is experimenting with rubber-covered wires wrapped ten times around a mandrel and connected with an automobile magneto. A high-tension current is then conducted through a sample of the wire to be tested, while a special device short circuits this current through the mandrel and back to the magneto.

The department is not yet in a position to state what dependence may be placed upon the results of this test, which aims to bring out the relative merits of various types of wire.—*Laboratories' Data.*

New Goods and Specialties

Heavy Duty Stamp Pad with Rubber Base

THE "Supreme Super Service Bank Pad," shown in the accompanying illustration, constructed to withstand the heaviest service, has a base made entirely of solid rubber, molded to receive the heavy felt pad which holds the ink. It is practically indestructible, the felt being renewable as required, and each pad is equipped with a dust-proof metal cover. The rubber base serves to prevent the pad from slipping on a polished surface as well as to make it noiseless in use. The over-all diameter is five inches, the stamping surface being 3¼ inches in diameter. A special advertising campaign is planned by the manufacturers and attractive discounts are made to the trade.—The Sachs-Lawlor Co., 1543 Larimer street, Denver, Colorado.

Molded Rubber Stamp Pad

"Secretex" Rubber Reducing Girdle

Since the rubber reducing garments seem to have a permanent market value, and the number of models is constantly increasing, the next progressive step is the elimination of the tendency of the rubber to split. "Secretex" is claimed to solve this problem. It is claimed that it will not split, and is exceptionally long-wearing. A garment made of this material has the same general properties of the ordinary rubber reducing corset, it is said, giving a slimmer appearance instantly and gently massaging away flesh. It may be washed and dried in 15 minutes.—Charles R. De Bevoise Co., Newark, New Jersey.

"Secretex" Girdle and Bandeau

Millinery for Mermaids

Department stores are showing the latest bathing novelties of the "Ocean Millinery" line. Among them is the "Daisy" cap, more attractive than ever, developed in contrasting colors of rubber daisies thickly applied all over the cap; the "Mary Garden" cap of rose-colored rubber, decorated with a band of rose-colored poppies applied softly around the headband; and the "Bob," designed for wear with bobbed hair.—L. C. Studios, Inc., 366 Fifth avenue, New York City.

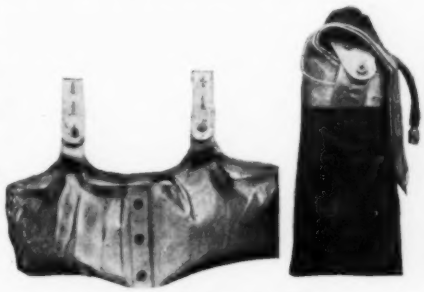
THE VULCANIZED RUBBER CO., 251-255 FOURTH AVENUE, NEW York, N. Y., is giving publicity to its Ajax Quality hard rubber combs, several of the newest designs being especially for bobbed hair. These are reported to be finding a ready market.

Rubber-Faced Cretonne Shower Bath Curtains

Department stores are showing a very practical innovation in curtains for the shower bath. Cretonne in bright designs and fast colors is heavily rubberized on the inside, making a curtain which is always dry and is a decorative feature as well. The same rubberized material is used for sponge bags and splashers.

Ten-Ounce Inflatable Life Buoy

The "Seven Seas" Swimming buoy illustrated has an exterior of silk, satin, khaki, or other fabric and an interior of finest quality rubber applied in from 40 to 50 layers by a special process, yet it is so light in weight and so velvety in texture that it may be worn deflated under the usual clothing without bulkiness or discomfort, it is claimed. A special valve permits instant inflation so that it affords assurance of safety not only to swimmers and those just learning to swim but to travelers overseas and to aviators. The buoy forces the body into an upright position, regardless of the position in which one enters the water. When not in use it folds up into a small, waterproof envelope weighing only ten ounces. It is made in a variety of sizes and colors.—Seven Seas Swimming Buoy Co., 141 Broadway, New York, N. Y.



Seven Seas Swimming Buoy

Reducing Girdle with "Jiffy Lock"

The special feature of the rubber reducing garment illustrated is the jiffy lock, which takes the place of the ordinary corset fastening and makes it possible to take the garment off without stretching it in the least while it is wet with perspiration. It is "on or off in a minute," is neat in appearance and is made of Para rubber.—Beyerle Manufacturing Co., Inc., 160 Fifth avenue, New York, N. Y.

"Jiffy Lock" Reducing Garment

Goodyear's "35" Line of Repair Materials

The Goodyear Tire & Rubber Co., of Canada, Ltd., Toronto, Ontario, is marketing a new line of repair materials which is designated the "35" line, the name being significant of the fact that the company recommends 35 pounds of steam pressure for all tire repairs, allowing a time schedule averaging from 35 to 55 minutes, depending upon the size of the tire and the nature of the repair. The great advantage claimed by the company for this line is that the tensile strength of the new cushion and tube gum has been increased 100 per cent, making possible a corresponding increase in the wearing qualities of the repair.

Rubberized Quilting

A close relation to the rubber sheet for infants' beds and for use in hospitals is the "Nevawet" quilted product now being marketed, which is rubberized on one side after the quilting stitches are in, and has the edges bound with the rubberized material. It is very light weight and is stable enough to "stay put," without being stiff or having the "feel" of rubber. A good quality of cotton is employed and the quilting may be had in any desired width.—Nevawet Manufacturing Co., 476 Broadway, New York, N. Y.

Walking Stick Baby Carriage

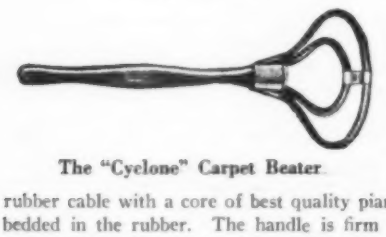
By affixing the lower end of a walking cane to the axle of a collapsible canvas go-cart and clamping the back of the triangular seat frame to the shaft of the cane, a parent with an inventive turn constructed what has been termed the smallest baby car in the world. It is equipped with rubber-tired wheels and the long

Courtesy of Scientific American

Smallest Baby Car in the World

leverage makes comfortable traveling for both interested parties. When not needed the go-cart can be slipped off the cane and folded into a small, easily carried bundle, the walking cane meanwhile returning to its original duty.

Carpet Beater of Rubber Cable



The "Cyclone" Carpet Beater

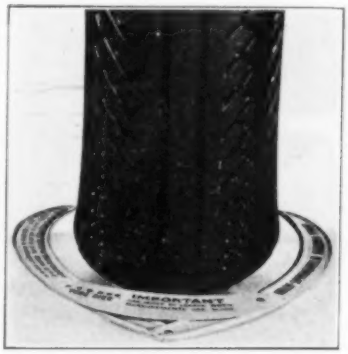
A carpet beater which the manufacturers claim will not injure the most delicate fabric and which is yet built to withstand the heaviest service is made of rubber cable with a core of best quality piano steel spiral wire embedded in the rubber. The handle is firm and well balanced and the weight, all told, is about half that of an ordinary tennis racket, which it resembles in contour. A United States patent has been applied for and the inventors are desirous of getting in touch with interested American manufacturers.—The Rubber Steel Patents Co., 7 Alfred street, Belfast, Ireland.

Crêpe Sole on Rubber Bathing Shoe

The newest application of the crêpe rubber sole is to an all-rubber bathing shoe. The sole is knurled on the walking surface to give firm footing on slippery surfaces, and is cemented to the top part which is of colored rubber similar to that used for bathing caps. The decoration consists of a double ruffle of contrasting color applied down the front of the slipper from the instep to the toe.—I. B. Kleinert Rubber Co., 485 Fifth Avenue, New York City.

A Balloon Tire Caliper

The "Kelometer," shown in the accompanying illustration, is a device for indicating quickly and accurately the correct inflation for a balloon tire of a given size, carrying a given load. It is made of light but rigid stamped metal with a series of holes in the cross-piece. A pin is set in the proper cross hole corresponding to the size of the tire and with the car loaded to its normal capacity; then air is let in or out until the calipers fit easily over the greatest width or bulge of the tire near the point of road contact.—Kelly-Springfield Tire Co., Akron, Ohio.



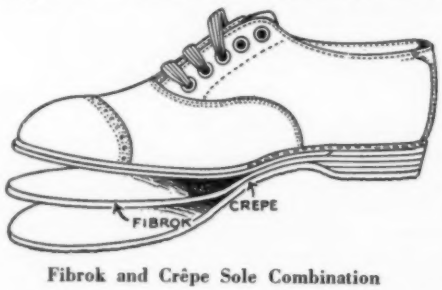
The Kelometer in Use

Cross Straps on Bathing Slippers

The footwear fad for various kinds of straps over the instep has brought out a cross-strap all-rubber bathing slipper, the straps being cemented into place and cut from strips of white rubber contrasting with the color of the slipper which is molded according to the newer method. There is also a band of white around the instep and a white toe-cap. This slipper is designated as the "Glove Brand."—Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Connecticut.

Len-Glen Tennis Shoe

The success of crêpe rubber soling has necessitated important changes in shoe construction to gain inseparable attachment of the crêpe sole without sewing. In the Len-Glen tennis shoe an intermediate Fibrok sole is used for knitting together the parts of the shoe bottom. The structure features are clearly shown in the illustration. Fibrok soling is built up of finest interwoven fibers to give strength. The fibers and interstices between are impregnated with rubber latex. Consequently a large percentage of Fibrok is rubber and its qualities make it ideal for use in conjunction with crêpe soling. It can be split, channelled, grooved, skived, buffed, sewed or nailed exactly like leather.—Fibrok Products Limited, 10 Fenchurch avenue, London, E. C. 3.



Fibrok and Crêpe Sole Combination

Felt-Covered Sponge Rubber Chair Pad

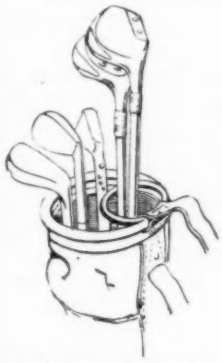
The sponge rubber chair pad is winning a place in popular favor. Its chief advantages are its durability, comfort, and the fact that it "stays put" on the chair without straps or other contrivances. The one illustrated has a felt cover on the top side which not only adds to the attractiveness of the cushion but has been found to be a protection to the clothing.—The Miller Rubber Co., Akron, Ohio.

Sponge Rubber Chair Cushion

"Aerotank" Inner Tubes

In order to test the toughness and strength of the rubber used in their inner tubes the manufacturers submitted an aerotank tube to such a degree of over-inflation that it ballooned in one section, and this ballooned section withstood the weight of three full-sized men. These tubes were originally designed for use in heavy trucks and are consequently capable of giving super-service in pleasure cars. One of the special features claimed is that the aerotank when inflated stretches very slightly to fill the casing, so that the pores of the rubber are not opened enough to allow the air to seep out. The original air pressure remains in the tube and this constant air pressure eliminates rim cuts, stone bruises and other tire troubles. Each tube is equipped with a quick-detachable dust cap.—K & W Rubber Co., Delaware, Ohio.

Rubber Covered Club Separator for Golf Bags



"The Mot" Club Separator

A simple attachment easily and securely applied to any golf bag divides the bag into two compartments, separating one's favorite clubs from the others so that they are quickly extracted from the bag and at the same time are protected from damage by contact with the other clubs.

The separator is made of strong steel wire, rubber covered and comes in two sizes. A special discount is offered to American agents. —Tom L. Jones, 192 Blomfield Terrace, Paddington, W. 2, London, England.

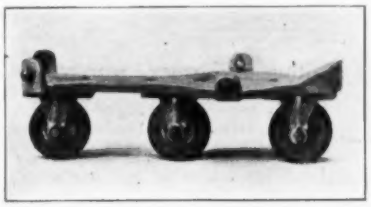
Imported Rubber Bathing Accessories

Among the novelties of the season are dainty triangles of rubber, intended for scarfs or caps when properly adjusted, imported from Germany. They come in black, blue, or lavender, on which has been imprinted a soft all-over design of small flowers and leaves in white; green with the design in black; or cream and light tan in wavy stripes with the design in green. They are made of good quality rubber and the edges are decorated with a strip of contrasting color or white.

HYCOE BRAKE LINING, WHICH IS MANUFACTURED BY THE Manhattan Rubber Manufacturing Co., Passaic, New Jersey, is folded and stitched and subjected to hydraulic compression in the manufacturing process and it is claimed that it sets a new braking standard to meet the radical improvements in brakes.

Three-Wheeled Roller Skate

An English inventor has patented a three-wheeled skate which is claimed to have racing speed and poise. The wheels are of the ordinary steel type, and may be equipped with flat rubber tires. The usual heel-plate and inclined toe-piece are provided and the skate itself may be made of aluminum.



The Shindler 3-Wheeled Skate

The wheels, the middle one of which has a lower tread than the others, are supported by ribbed brackets integral with or connected to the sole plate.—R. Shindler, 69 Fernlea Road, Balham, S. W., London, England.

A Garden of Rubber Flowers

Underwood & Underwood

Washing the Rubber Flowers

One of the most attractive novelties exhibited at the Wembley Exhibition was a garden in which the flowers, grass, crazy paving and even the worms were made of rubber. There were many varieties of the flowers, all of them true to nature in form and coloring, the rubber lending itself to every requirement in the reproductions. The flowers are practically indestructible, requiring only occasional sponging off with clear water in order to keep them in perfect appearance.

Max-Fli Golf Ball Improved

The Dunlop Rubber Co., Ltd., Regents Park, London, has brought out a new "Max-Fli" golf ball, which instead of having a center of paste, as had the former ball, has one of extremely resilient rubber. The manufacturers say that greater accuracy of centering is gained by this substitution, coupled with the certainty of having every ball a perfect sphere. Another specific feature of the improvements is the new and specially durable paint which is used in finishing this latest type of "Max-Fli."

THE EMPIRE SHIELD CO., 561 BROADWAY, NEW YORK, N. Y., is featuring a "Comfotex" sanitary step-in for women's wear that is said to be gaining great popularity. It is made of the finest and lightest weight rubber, with broad inserts of marquisette at the sides, thus combining coolness and protection. An elastic band at the top insures a snug fit without pins. The same company is marketing a "Comfotex" product for babies wear, in the form of very light weight rubber pants with marquisette side inserts for ventilation.

The Obituary Record

Brother of Former United States Rubber Co. Head

LEBARON BRADFORD COLT, senior United States senator from Rhode Island, and brother of the late Colonel Samuel P. Colt, formerly chairman of the United States Rubber Co., died from heart trouble and nephritis at his summer residence, "Linden Place," Bristol, Rhode Island, August 18, 1924, in his seventy-ninth year.

LeBaron Bradford Colt

Senator Colt, of Colonial ancestry, was born in Dedham, Massachusetts, in 1846. A brilliant student, he chose the legal profession as his life work and received numerous degrees from Yale, Columbia and Brown universities. In 1872 he began the practice of law in Chicago, Illinois, and the following year married Mary Louise Ledyard, of that city. He moved to Bristol, Rhode Island, in 1875 and practised law in Providence, that state, until 1881.

Meanwhile politics and the judiciary had claimed him. From 1879 to 1881 he served as a member of the Rhode Island House of Representatives. In 1881 he was appointed United States district judge for the District of Rhode Island, and in 1884, circuit judge for the First Judiciary Circuit. The latter office he filled ably until 1913, when he was elected United States senator. Following a distinguished career in that body he was reelected in 1919 and his term had not expired at the time of his death.

Senator Colt was prominently known in the legal profession throughout the country as a man possessed of the most profound knowledge of the law and whose aim was to deal out even-handed justice. His decisions while on the bench were seldom questioned or reversed by the Supreme Court of the United States. He was a forcible and eloquent orator and made many notable addresses.

He had one son and four daughters, and is survived by three daughters, Mrs. Edwin A. Barrows and Mrs. Harold J. Goss, wife of former Lieutenant-Governor Goss of Rhode Island, both of Providence, and Mrs. Andrew Weeks Anthony, of Bristol.

Funeral services at the Colt residence on August 20 were conducted by the Right Reverend James DeWolf Perry, bishop of the Protestant Episcopal diocese of Rhode Island. Burial was made in Juniper Point Cemetery, Bristol.

A Founder of Cassirer & Co., Charlottenburg

On June 18, Julius Cassirer, one of the founders of the Kabel und Gummiwerke Dr. Cassirer & Co. A-G., Charlottenburg, Germany, died at the age of 83 years.

Julius Cassirer was born in 1841 at Königshutte, Upper Silesia. He entered the commercial line and later on, with his brother, Louis Cassirer, and nephew, Dr. Hugo Cassirer, started a small cable and rubber factory in rented quarters. This factory developed so rapidly that in 1898 the firm built its own works, which have continued to grow.

Mr. Cassirer's broad knowledge was soon recognized and he became a member of the Berlin Chamber of Commerce; later he was commercial arbitrator, and in 1914 he received the title of Commercial Councillor (Kommerzienrat). His lovable disposition and high intellectual qualities earned for him the esteem and respect of all who knew him.

General Manager Excelsior Rubber Factory, Hannover

After a brief illness, Wilhelm Siercke, for many years general manager of the Hannoversche Gummiwerke Excelsior, died on July 14, 1924.

He was born May 25, 1867, at Hamburg, and at the age of 18 joined the Hannoversche Gummi-Kamm Compagnie, and in a few years he was traveling representative of his firm, covering the greater part of Europe.

As the firm expanded, he gradually gave up his foreign travels to take a more prominent part in the direction of the firm. In 1902 he was made business manager and in 1914 he became general manager of the firm that had by this time taken the name of Hannoversche Gummiwerke Excelsior. At the beginning of 1921 he was nominated Consul of Portugal in Hannover.

Mr. Siercke had always shown great interest in cycling and later in automobiling, and carried off numbers of prizes. As member of the German Volunteer Automobile Corps, later Imperial Volunteer Automobile Corps, he took part in nine maneuvers from 1905 to 1913. During the war he gave his services to his country as member of the above corps and received various decorations.

Mr. Siercke was a member of the directorate of the Central Union of the German Rubber Industry and was also connected with the Association of German Motor Vehicle Manufacturers. Up to the time of his death he was president of the Hannover Automobile Club. His passing is keenly felt, not only by the German rubber industry, but in all German industrial circles.

RUBBER GOODS EXPORTED DURING FISCAL YEAR 1924

During the fiscal year ended June 30, 1924, the United States exported to foreign countries rubber goods manufactures worth $35,542,822, as compared with $37,962,842 in the preceding year. This decline in values is in general due to conditions in the pneumatic tire trade of the world. There has been a satisfactory gain, however, in export sales of almost all classes of rubber goods other than tires, the trade in mechanical goods being much heavier, while sales of rubber footwear, with the exception of canvas rubber-soled shoes, have also increased.

One of the chief reasons for the comparative decline in American exports of tires has been the fact that some foreign rubber manufacturers, Michelin in particular, have been able, due to the exchange situation prevailing in 1923, to sell their tires at prices which would mean loss to American companies. The Dunlop organization has also greatly increased its efficiency, and now handles a large share of the trade in foreign markets. Still another explanation for the decline has been the custom of certain American tire companies to forward goods from Canadian branch factories.

For these various reasons the value of automobile casings exported from the United States during the fiscal year 1924 totaled only $12,947,642, or 36.4 per cent of the total value of rubber goods exported, as compared with corresponding values for the fiscal year 1923 of $17,545,308, or 46.2 per cent of the total value of rubber goods exports. An advance, however, is noted in sales of solid tires for trucks, such exports in the fiscal year 1923 numbering only 79,428, as compared with 103,983 in 1924. Should the stabilization of European currency become an established fact, more normal conditions will return, with better prospects for the American industry.—*Commerce Reports.*

News of the American Rubber Trade

Rubber Industry Outlook

THE rubber manufacturing industry is rapidly recovering from the slump prevailing in June when tire manufacturing was at low ebb because of belated seasonal buying and the fact that available stocks of 19,000,000 tires had been greatly overestimated.

When the seasonal buying began in force a shortage of tires became evident. Therefore, manufacturers were obliged to increase production schedules somewhat earlier than expected to meet the actual conditions. The increase is probably destined to be of limited duration since no corresponding enlargement of automobile production is taking place.

Tire production in the Akron district now approaches a daily output of 90,000 tires and the larger plants are seeking tire makers for still further increasing their schedules. Tire prices remain unchanged and those manufacturers who did not provide for their approaching requirements will experience difficulty in maintaining a fair profit on their goods, in view of the recent price advances in crude rubber and cotton.

Financial summaries by leading rubber companies show gains in tire earnings for the first six months of this year. Executives are frankly more optimistic concerning the outlook for satisfactory fall business than they have been at any time during the past three or four years.

The important divisions of footwear and mechanical rubber goods manufacture completed profitable campaigns in seasonal goods during the first six months and have resumed enlarged operations for fall and winter production.

Financial

U. S. Rubber Co.'s Semi-Annual Statement

C. B. Seger, chairman of the board, sent the following statement, on August 20, to stockholders of the United States Rubber Co.

In accordance with the practice established by this company in 1916 of advising its stockholders as to the results of operations during the first six months of the calendar year, the following statement is submitted with respect to the first six months of 1924. It is again pointed out that the business of this company, by reason of the nature of the commodities handled, is subject to seasonal conditions and is necessarily conducted and must be considered on a yearly basis. Therefore, results and comparisons for any period of less than a year are not conclusive, and might be misleading.

Sales for the first six months of 1924 amounted to $77,774,696, a decrease of $9,935,509 compared with the corresponding period of last year. This decrease was due in part to lower selling prices, but principally to general business conditions. The tire business of the company has shown very substantial improvement, and, in spite of materially lower prices, the results for the first six months have more than justified the hope expressed in the annual report for last year. The outlook for a continuance of this improvement is very encouraging.

Net income before interest, but after all other charges including depreciation of plants, amounted to $7,510,415; interest on the funded debt amounted to $2,360,200, and all other interest amounted to $727,728, making a total of $3,087,928, thus leaving net profits of $4,422,487 for the period. This compares with $4,572,861 for the first six months of 1923.

As of June 30, 1924, current assets amounted to $127,116,000 as compared with $125,058,000 as of the close of last year, an increase of $2,058,000. The current assets consisted of $50,017,000 in cash and accounts receivable, and $77,099,000 in inventories of finished goods and raw materials. Current liabilities amounted to $53,492,000 as compared with $50,438,000 as of the close of last year, an increase of $3,054,000. The current liabilities consisted of $40,160,000 in bank loans and $13,332,000 in current accounts payable, including acceptances for importation of crude rubber, and accrued liabilities. The funded debt has been reduced $947,000, since December 31, 1923, by the retirement of $767,000 of the company's first and refunding mortgage 5 per cent gold bonds, and $180,000 of its 7½ per cent gold notes, through the operation of sinking funds.

Contractual liabilities representing commitments for purchase of raw materials and supplies covered only current requirements, and as to prices were at or below current market.

The company's current liabilities are created only for current operating requirements, and are wholly represented by accounts receivable and inventories. The accounts receivable are collectible, adequate reserves having been established out of current income to provide for possible bad debts, and inventories are at sound values and as to quantities are conservative on the basis of current requirements.

The seasonal nature of the company's business necessitates accumulating stocks in the first six months of the year to meet heavier shipments to be made during the remaining months. This results in inventories being at their highest point about the middle of the calendar year. Purchases of materials and production schedules are currently controlled and regulated, which results in inventories being at all times kept down to the minimum consistent with sales requirements.

Dividends Declared

COMPANY	STOCK	RATE	PAYABLE	STOCK OF RECORD
Boston Woven Hose & Rubber Co.	Com.	$1.50	Sept. 15	Sept. 2
Firestone Tire & Rubber Co.	7% Pfd.	1¾% q.	Aug. 15	Aug. 1
Goodyear Tire & Rubber Co.	8% C. Pr. Pfd.	2% q.	Oct. 1	Sept. 20
Hood Rubber Co.	Pfd.	$1.75	Sept. 1	Aug. 20
Miller Rubber Co.	Pfd.	$2.00	Sept. 1	Aug. 9
Mohawk Rubber Co.	Pfd.	$2.00	July 1	.....

New York Stock Exchange Quotations

August 23, 1924

	High	Low	Last
Ajax Rubber, com.	11¼	9¾	10⅛
Fisk Rubber, com.	10⅛	8⅞	9¾
Fisk Rubber, 1st pfd.	66⅝	58½	64½
Goodrich, The B. F., Co., com.	25	23⅛	23¾
Goodrich, The B. F., Co., pfd. (7)	82⅛	79⅝	81
Goodyear Tire & Rubber, pfd.	60½	57¾	58¾
Goodyear Tire & Rubber, pr. pfd. (8)	97½	95¼	97⅜
Kelly-Springfield Tire, com.	17¾	16¼	16½
Kelly-Springfield Tire, pfd.	50½	50½	50½
Kelly-Springfield Tire, 1st pfd.	50	49¾	50
Keystone Tire & Rubber, com.	2¼	2⅛	2⅛
Lee Rubber & Tire, com.	12¼	11	11½
United States Rubber, com.	38¼	34¼	35⅞
United States Rubber, 1st pfd. (8)	90¼	88¼	88½

Akron Rubber Stock Quotations

Quotations of August 19, supplied by Otis & Co., Cleveland, Ohio.

	Last Sale	Bid	Asked
Firestone com.	76½	77	80
Firestone 1st pfd.	96	95½	96½
Firestone 2nd pfd.	86	86½	90¾
General com.	180	...	...
General pfd.	97½	...	100
Goodrich com.	22	...	...
Goodrich pfd.	79¾	...	...
Goodyear com. V. T. C.	12	11¾	12¼
Goodyear pfd. V. T. C.	60	59½	61
Goodyear pr. pfd. V. T. C.	95¼	94	...
McGraw com.	⅛	...	...
McGraw pfd.	¼	...	...
Miller com.	75	75	85
Miller pfd.	97	97⅛	97½
Star com.	9	...	...
Star pfd.	30	...	...
*Swineheart com.	16	...	20
Victor com.	¼	...	1
Victor pfd.	...	...	...

*Unlisted securities.

New Incorporations

B. & W. Rubber Co., Inc., August 2 (New York), $35,000. Incorporators: Julius Wielar and Abraham Wielar, both of 261 Broadway, New York City, and August Beck, 105 Miln street, Cranford, N. J. Principal office, Manhattan. To manufacture elastic, cotton goods, etc.

Blackfoot Tire & Rubber Co., Inc., July 10 (Illinois), 200 shares of common stock, no par value. Edwin P. Keim, president; Lewis W. Lepman, vice-president; Frederic J. Greenbaum, treasurer, and Peter H. Enzweiler, secretary. Principal office, 1716 S. Michigan avenue, Chicago, Illinois. To market tires.

Chain Tire Stores of America, Inc., August 9 (New York), $20,000. Incorporators: Selma Solomon and Ruth Bornheim, both of 190 C Beach 29th street, Edgemere, L. I., and Samuel S. Multer, 1257 Elder avenue, Bronx, New York City. Principal office, Manhattan. Distributers of rubber goods.

Cincinnati Truss Co., The, July 1 (Ohio), $10,000. Directors: John Cantzler, J. A. Cantzler, M. Cantzler, E. C. Shaw and Chas. Dickhoff. Principal office, 120 East 8th street, Cincinnati, Ohio. To manufacture elastic stockings, trusses, etc.

Corker Mfg. Co., Inc., August 2 (New Jersey), $125,000. Incorporators: Jacob H. Zeitlin, 23 Central avenue; Stewart C. Whitman, 91 Court street, both of Newark; Ike Dolgan, 330 Kearny avenue, Kearny, all of New Jersey; Edward J. Zeitlin, 2067 Harrison avenue, and William E. Warner, 969 Forest avenue, both of New York City. Principal office, 23 Central avenue, Newark, New Jersey. To manufacture gaskets, packings, nut locks, etc.

Everlast Heel & Rubber Co., July 18 (Delaware), $200,000. Incorporators: E. F. Craig, A. L. Raughley and M. E. Scanlon, all of Dover, Delaware. Principal office with the United States Corporation Co., Dover, Delaware. To manufacture and deal in rubber and gutta percha and all goods made therefrom.

Fiberlastik Co., The, July 17 (Rhode Island), 100 shares of common stock without par value. Incorporators: Frank Bartlett, Richard E. Lyman and Arthur J. Levy. Principal office, Providence, Rhode Island. To purchase and manufacture textile fabrics containing elastic.

Gunnels Co., July 2 (Arkansas), $15,000. T. M. Davis, president; T. D. Fleming, vice-president; H. A. Craig, treasurer, and Floy McGinley, secretary. Principal office, 11th and Main streets, Little Rock, Arkansas. To distribute tires, tubes, accessories, batteries, etc.

Lincoln Tire & Rubber Co., July 8 (Pennsylvania), $25,000. F. E. Weddell, president, Scottdale; J. C. Bierer, vice-president, and I. W. LaBarrer, secretary and treasurer, both of Uniontown, and all of Pennsylvania. Principal office, 808 Fayette Title & Trust Building, Uniontown, Pennsylvania. To either manufacture or trade in rubber, rubber products or substitutes.

Miracle Rubber Co., Inc., August 20 (New York), 100 shares no par value. Incorporators: Theodore Hansen and Joseph Broderick, both of 55 Broadway, New York City, and T. E. R. Beardsley, Scotch Plains, New Jersey. Principal office, Manhattan. To deal in rubber, gutta percha, etc.

Moore's Quick Tire Service, Inc., August 13 (New York), 100 shares no par value. Incorporators: R. E. Allen, 400 Elmwood avenue; M. G. Owens, 183 Wallace avenue, and C. C. Jewett, 77 Bryant avenue, all of Buffalo, New York. Principal office, Manhattan. To carry on a tire business.

Pneumatic Tire & Supply Co., Inc., July 28 (New York), $10,000. Incorporators: Bella Lebang, Albert Raines and Ethel Raines, all of 174 East 74th street, New York City. Principal office, Manhattan. To distribute tires, etc.

Prime Shoe Co., The, July 17 (Massachusetts), $50,000. Arthur Smith, president, 113 Meridian street, East Boston; Bernar Fierman, treasurer, 3 Red Rock street, and Elizabeth M. Mara, clerk, 25 Central Square, both of Lynn, and all of Massachusetts. Principal office, Lynn, Mass. To manufacture, import, export and otherwise deal in boots, shoes, rubber and rubber goods and shoe supplies of all kinds.

Royer Rubber Patch Co., Inc., May 31 (Florida), $10,000. W. G. Seals, president; H. H. Royer, vice-president, and D. B. Vincent, secretary and treasurer, all of Jacksonville, Florida. Principal office, Jacksonville, Florida. To manufacture rubber goods, particularly rubber patches and cold vulcanizing liquids.

Supercushion Tire Co., July 30 (Ohio), $50,000. C. L. Lapman, president, and W. A. Brubaker, secretary and treasurer. Principal office, 81 Hall street, Akron, Ohio. To manufacture and sell tires.

Triangle Rubber Supply Corp., May 7 (North Carolina), $25,000. C. A. Crutchfield, president, and C. H. Moneypenny, secretary and treasurer, both of Greensboro, North Carolina. Principal office, 1891 West Lee street, Greensboro, North Carolina. To carry on a wholesale tire and tube business.

Truck-Bus Tire Service Corp., August 4 (New York), $100,000. Incorporators: E. H. Stegman, Charles C. Evans and S. Zinman, all of 160 Broadway, New York City. Principal office, Manhattan. To sell rubber products.

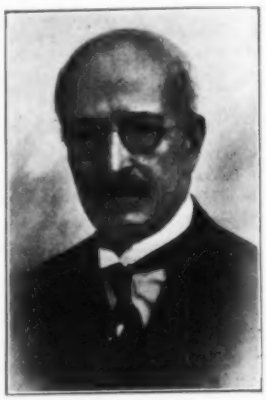
Walker Tire Sales Co., Inc., August 8 (New York), 100 shares no par value. Incorporators: R. E. Allen, 400 Elmwood avenue; M. G. Owens, 183 Wallace avenue, and C. C. Bohn, 77 Bryant avenue, all of Buffalo, New York. Principal office, Manhattan. To deal in auto tires.

Wienard Rubber Co., Inc., August 9 (New York), $20,000. Incorporators: Sam S. Multer, 1257 Elder avenue, Bronx, New York City; Chas. Bornheim and I. J. Solomon, both of 190 C Beach 29th street, Edgemere, L. I., N. Y. Principal office, Manhattan. To specialize in rubber products.

COMBINED EXPORTS FROM THE UNITED STATES TO ALASKA OF belting, hose, and packing totaled in June, 1924, 25,829 pounds, value $13,168. Similar exports to Hawaii included 23,942 pounds, value $10,446; and to Porto Rico, 11,944 pounds, value $3,791. Total shipments of these goods for the first six months of the present year were estimated as follows: To Alaska, 185,675 pounds, value $88,875; Hawaii, 174,187 pounds, value $81,263; and to Porto Rico, 60,766 pounds, value $21,540.

Dean of the Dress Shield Trade

On August 31 Henry P. Rand (formerly Rindskopf), founder and president of the Brooklyn Shield & Rubber Co., Brooklyn, New York, celebrated his seventieth birthday, the oldest active man in the dress shield business today.



Henry P. Rand

Born in 1854 in New York, N. Y., he was educated in the public schools of that city, and in 1880 engaged in the rubber business. He was the pioneer in the United States in the manufacture and use of smooth sheet rubber linings for dress shields. Previous to his manufacturing these linings they were imported from Germany and other continental countries. Since then other rubber manufacturers have followed Mr. Rand's lead in producing these linings in the United States. He has been in this sense the father of them all.

While a mass of detail work is now carried by younger men whom he has brought up in the business, Mr. Rand is still actively interested in shaping the policies of the Brooklyn Shield & Rubber Co. It has been extremely gratifying to him to have watched the gradual and steady growth of his specialty business from a small beginning, until now a plant of ample size, equipped with the most modern rubber mill machinery, makes everything in sheet rubber, from a reducing garment to a tobacco pouch.

For a man of his age Mr. Rand lives a busy and active life. Several months of the year are spent at his country estate in Stony Creek, Connecticut. He is an ardent disciple of Izaak Walton, and holds all records for the New Haven fishing district. It is a well-known fact that several of his neighbors at his country home have accused him of using sulphur in his bait.

He is a member of the Brooklyn Chamber of Commerce, Fulton Street Board of Trade and Pine Orchard Country Club.

His many friends in the rubber trade wish him many more years of the sound, solid and healthy life he is now leading.

The Rubber Trade in the East and South

The scarcity of orders, which was general in all branches of the industry a month or six weeks ago, has been eliminated and mills are now speeding up production. The large tire companies are producing on large schedules somewhat short of capacity. Smaller tire companies are working, in many instances, close to capacity. The manufacture of automobile topping has been resumed under conditions precluding likelihood of overproduction since one of the large topping concerns is now in process of liquidation. The manufacture of insulated wire is now more competitive but the mills are very busy on orders.

In footwear the summer closing period has been shortened and factories are now at work on heavy winter goods. The production of heels has increased in volume with the improvement in the leather footwear industry. Equipment orders in mechanical rubber goods lines have increased and full time operation will soon be in order.

Garden hose companies are now in their period of summer stock taking and repairing, preliminary to resuming operations for the output of goods for the 1925 season.

Eastern and Southern Notes

Bancroft W. Henderson & Co., Inc., has opened offices in the Fisk Building, 250 West 57th street, New York, N. Y., and will

import and deal in crude rubber. Mr. Henderson, head of this new concern, is well known in the industry, and was formerly vice-president of F. R. Henderson & Co., Inc.

Joseph H. Hayden has been appointed manager of the New York branch maintained by the Hewitt Rubber Co. at 9 West 61st street, New York. Mr. Hayden has held responsible positions with the Hewitt organization since his coming to that company in 1917, while for several years previous he had been connected with the sales department of the Republic Rubber Co.

T. S. Lindsey has been appointed general sales manager of the Kelly-Springfield Tire Co., 250 West 57th street, New York, N. Y., while W. H. Bell will serve in the capacity of assistant sales manager.

Oliver & Keeler, crude rubber brokers, have moved their offices to 89 Broad street, New York, N. Y.

C. B. Seger, who has been recently elected chairman of the finance committee of the Union Pacific Railroad, has stated that he has no intention of severing his connections with the United States Rubber Co. In 1918 Mr. Seger retired as president of the Union Pacific to become president of the well-known rubber organization.

The Bison Tire Co., Inc., Buffalo, New York, is now operating two branch stores, one at 1172 Broadway, and the other at 334 West Ferry street. The main store is located at 1006 Main street, while a service station is also maintained at 165 North Pearl street. Good business is reported at all four of these Buffalo establishments, where Dunlop tires, both solid and pneumatic, are being handled. S. Waterfall is general manager.

The Braender line of casings is being handled by the North Side Tire Co. at 536 North Salina street, Syracuse, New York.

The Atlantic Dyestuff Co., Portsmouth, New Hampshire, specializing in the manufacture of colors, dyes, and dyestuffs, has been adjudged bankrupt, and A. C. Burrage, Jr., has been appointed receiver.

The Seamless Rubber Co., New Haven, Connecticut, manufacturer of rubber goods since 1877, reports plant operations at normal capacity during the first six months of the present year, notwithstanding the fact that business conditions in general throughout the industry have been somewhat adverse. F. O. Williams is president.

The Baumann Rubber Co., New Haven, Connecticut, is specializing in the manufacture of rubber reducing garments, two patents for the production of such goods having been granted.

For the purpose of caring for increasing business and also inaugurating an advertising campaign, the H. H. Allyn Rubber Corporation, Norwich, Connecticut, manufacturing inner tubes, has increased its capitalization from $500,000 to $750,000. The company reports favorable conditions since the opening of its new plant at Norwich on March 1. O. A. Ryfe is director of sales.

The capacity of the power plant at the factory of The Continental Rubber Co., Erie, Pennsylvania, is being increased by the installation of two Taylor stokers under two 335 h. p. boilers.

The Lincoln Tire & Rubber Co., Fayette Title & Trust Building, Uniontown, Pennsylvania, is acting as sales agent for the Union Rubber Co., manufacturer at Zelienople, Pennsylvania, of "Zev" cord tires.

Thomas E. Maginnes is in charge of the Bethlehem, Pennsylvania, branch of the Globe Rubber Tire Manufacturing Co., a new office created in that territory.

The Standard Rubber Co., Inc., 420 South 20th street, Birmingham, Alabama, reports marked success in its wholesale and retail handling of Mohawk and Viking tires. Executives of the Standard organization include: Carr McCormack, president; Solon Jacobs, vice-president; R. H. Borders, Jr., vice-president, and Wallace Harrison, secretary.

The Independent Tire Co., Inc., 338 West Adams street, Jacksonville, Florida, is distributer for Lee tires throughout south Georgia and Florida. W. N. Baker, vice-president and manager of the organization, formerly served as one of the Lee company's branch managers, while T. L. Hunt, credit manager of the Independent company, also acted in the same capacity for the Lee organization.

The Shaw Tire Co., Inc., Sixth and College streets, Charlotte, North Carolina, is the representative in Charlotte and Mecklenburg County of the Goodyear line of tires exclusively. The Shaw organization has discontinued selling other makes of casings.

Business during June, July and August, as reported by the New Lexington Tire Co., 342 East Main street, Lexington, Kentucky, has shown a marked increase over that of the first five months of the year. The company handles Seiberling cord tires, and is also finding a good market for Seiberling balloon casings.

Swayne Latham has been placed in charge of the branch at Memphis, Tennessee, maintained by The B. F. Goodrich Rubber Co., Akron, Ohio.

The Drennan Motor Car Co., Avenue D and Twentieth street, Birmingham, Alabama, is now handling the Firestone line of tires, both the standard type and balloon cords.

The Wholesale Tire & Supply Co., 33 Auburn avenue, Atlanta, Georgia, distributer and jobber, and handling tires, tubes and accessories, has taken on the distribution of Swinehart solid tires, as well as that company's line of T. N. T. cushion tires.

The Moore Tire Co., Greenville, South Carolina, is engaged in the manufacture of boots, blowout patches and reliners, and it is also carrying on a wholesale and retail tire business. W. H. Moore heads the organization.

Following its removal to larger quarters at 233 South Davie street, Greensboro, North Carolina, The Auto Tire Accessory Co. has installed considerable new equipment. The company, which is handling a complete line of Fisk tires, reports an increase of 20 per cent in its business during the last thirty days.

Both McClaren and Goodyear casings are now being handled by the organization known as the Swift Tire Service, Texas avenue, Shreveport, Louisiana.

The Rubber Trade in New Jersey

The decided improvement in business that became apparent during the past month in all rubber manufacturing centers was also experienced in Trenton and rubber manufacturers in this city believe that the future business outlook is most promising.

There has been a marked increase of tire orders, stimulated by low consumers' prices and the depletion of stocks in dealers' hands. The increasing cost of rubber and fabric with the attending rumors of advanced tire prices are additional factors in this tire movement. Business in mechanical goods, druggists' sundries, and auto topping is improving and footwear plants are again in seasonal production.

Howe Reorganization Plans

A reorganization committee was appointed at a meeting of the creditors of the Howe Rubber Corporation, New Brunswick, New Jersey, held on August 12. Charles D. Ross, the receiver, presided. George M. Griffith, who is acting as president, said it was planned to pay the creditors 25 per cent on July 15, 20 per cent on September 20 and 20 per cent on October 25. The plan to pay 100 per cent could not be worked out because of the lack of working capital to resume operations. The preferred stockholders' committee will be organized shortly and arrangements made to deposit the stock with a New Brunswick bank and some plan worked out whereby their interests will be protected.

The new reorganization committee is composed of D. D. Haldane, of J. T. Johnstone & Co., Inc., New York, N. Y.; C. Curry, of Brander & Curry, Inc., New York, N. Y.; H. C. Haigh, of

Brighton Mills, Passaic, New Jersey; and David Kubie, of Raw Products Co., New York, N. Y.

Vice-Chancellor Backes has continued Charles D. Ross as receiver of the Howe corporation and given the creditors until September 16 to present any objections they may have to his continuance as permanent receiver.

Carrier Organization Offers Laboratory Service

The Carrier Engineering Corporation, 750 Frelinghuysen avenue, Newark, New Jersey, which recently purchased the business of the Hunter Dry Kiln Co., has installed air conditioning equipment in plants representing more than a hundred industries. The Carrier organization offers to the rubber manufacturer some of the results of this experience as well as the service of its laboratories, where every facility for intensive research has been provided.

The present officers of the corporation include: W. H. Carrier, president; E. T. Lyle and E. T. Murphy, vice-presidents; E. P. Heckel, treasurer and general manager; J. I. Lyle, secretary, and L. L. Lewis and J. R. Duncan, in charge of the rubber industries department.

New Jersey Notes

Several Trenton rubber manufacturing companies have a number of veteran employes. William L. Robbins went to work at the Mercer Rubber Co. 48 years ago and is still working there. Isaac Taylor worked there 44 years and William Welch 42 years. I. Ely Reed, one of the officials of the company, has been with the concern 33 years. The Mercer company is one of the oldest rubber concerns in Trenton, having been established 56 years ago. Albert Evand and Charles Smith have been employed at the Empire plant for 40 years.

Rubber, leather, bicycle and automobile cements are manufactured by the Adolph Biller Rubber & Leather Cement Co., rear of 15 Pennington avenue, Trenton. These products include a vulcanizing cement, a special grade for raincoats, and five grades of rubber cement. Adolph Biller is president of the organization.

Reports filed in the Federal Court by J. Philip Bird and Edward C. Rose, receivers for the United & Globe Rubber Co., Trenton, show greater receipts and less expense. During the first week in July there was a balance of $7,685.07 in bank, with receipts of $32,303.98 and expenditures of $25,853.78. The following week there was a bank balance of $6,950.20, $35,991.11 in receipts and expenditures amounting to $14,220.76. There is now a balance on hand of $31,770.35.

The Murray Rubber Co., Trenton, continues to operate twenty-four hours a day and officials report the concern considerably behind in its orders for both tires and tubes.

The Pierce-Roberts Rubber Co., Trenton, which specializes in druggists' sundries, has had a very good season and is now operating to capacity. The company recently put on more help in an attempt to catch up with orders.

The Essex Rubber Co., Trenton, has enjoyed a good season and is still running to capacity in producing rubber soles and heels.

The Ajax Rubber Co. is now running 100 per cent capacity. This concern carries very little surplus stock and when orders began to come in recently extra help had to be employed. Officials report that the demand for tires and tubes is larger than the output. The company is also increasing the output of balloon tires.

The Globe Rubber Tire Manufacturing Co. has increased output and at the present time 1,200 tubes are being turned out daily with a corresponding increase in production of tires. The company recently called in all the old price lists and submitted new ones to the trade.

The United Rubber Machinery Exchange will remove its offices and warehouse to larger quarters at 315-317 Mt. Pleasant avenue, Newark, New Jersey. On September 1 the organization will be ready for business at the new location.

The Thermoid Rubber Co., Trenton, is operating 75 per cent capacity in tires and 65 per cent in mechanicals. A. H. Greywacz has been appointed assistant sales manager, succeeding O. H. Smith, who recently resigned.

Some departments of the Mercer Rubber Co., Trenton, are running to capacity while others are a little slack. The auto tube department has been busy all summer.

The Trent Rubber Co., Trenton, has increased its working force, following receipt of new orders. The company has not advanced prices.

Ernest C. Stahl, Jr., has been appointed receiver in equity of The Spartan Rubber Co., Trenton, with factories at Yardville, New Jersey. The plant is not now in operation and plans for the future have not been decided upon.

For thirty-five years plumbers' rubber specialties have been manufactured by an organization carrying on business as the Estate of Andrew Bell, 35 Commercial street, Newark, New Jersey. The company's products include rubber washers for faucets and fuller ball steam disk valves, while small mold work in the rubber line represents also part of the concern's output. H. R. Bell heads the organization.

The recent general wage readjustment at the plant of the Lambertville (New Jersey) Rubber Co. was accepted by practically all the employes. The concern has enjoyed a busy season and the plant is open again after a shutdown of two weeks. The annual sales conference was held recently at the plant, when business for the coming season was discussed. The following salesmen were present: H. M. Alexander, F. C. Cowles, F. S. Cummings, C. P. Day, Frank Eames, L. J. Glasgow, C. L. Harvey, A. E. Joseph, G. A. Knorr, J. D. McKay, D. W. Neish, M. A. Perkins, F. W. Jones, Walter T. Scott, Lambert Reed, A. Tinsman, H. T. Callan, William Phillips and James Brown.

The Rubber Trade in Rhode Island

U. S. Rubber Co.'s Hard Rubber Factory

The United States' hard rubber factory, at Providence, Rhode Island, represents a development which had its beginning in 1914, when the plant of the India Rubber Co., New Brunswick, New Jersey, was converted into a hard rubber factory. After 1917 this plant was operated in the name and under the control of the United States Rubber Co. The increasing demand for hard rubber products made plant extension necessary and in August, 1923, operations were transferred to the new Providence factory.

The capacity of the plant is estimated at 750,000 pounds of finished rubber products a month, while a floor space of approximately 160,000 square feet is devoted to manufacturing purposes. The entire plant includes a main three-story structure of the most modern type, with separate power plant, garage, laboratory and office buildings. The factory building is equipped with a dust-exhausting system throughout. In a separate two-story structure is maintained a very complete experimental and operating laboratory, where continued research is carried on for the improvement and extension of the United States Rubber Co.'s various lines.

O'Bannon Co. Liquidates

The O'Bannon Co., West Barrington, Rhode Island, has finally five large plants which comprised the holdings of this corporation with a millionaire president is about to pass into oblivion. The five large plants which comprised the holdings of this corporation were closed in part about the first of the past month and a few days later the final shutdown was made, the oilcloth division being the last to cease operations.

The O'Bannon Co. has been in financial straits practically since the close of the World War, despite the fact that during this

period large dividends were declared, as the mills worked day and night for months, turning out fabric for tents for the soldiers, rubber coated fabric for automobile tops, and gun cotton by the carload, first for the Russian Government and then for the United States Government.

The former directors went into the cotton market when at its highest and contracted heavily. Shortly after this investment down came cotton and the result is the present liquidation.

Five large plants, employing about 800 operatives, are affected, the two mills at West Barrington being the largest. Here the artificial leather mill was located and also the rubber coated fabrics plant. Many of the best automobiles throughout the country today are equipped with O'Bannon top and upholstery covering. In Phillipsdale, Rhode Island, the dye and chemical plants are located, while in Taunton, Massachusetts, the company has a large oilcloth mill.

The late John W. O'Bannon, who about six months ago died penniless in an insane asylum, was the founder of this once thriving corporation. The plant was removed from Nutley, New Jersey, in June, 1911, to West Barrington and later branched out to Phillipsdale and Taunton. Under Mr. O'Bannon's operation the concern became one of the leading manufacturers of rubber coated fabrics in the world, but Mr. O'Bannon sold his interests to John W. Reynolds of Boston. About three years ago, when Mr. Reynolds died, the company went into the hands of a receiver.

About two years ago the Russell Co. of Boston endeavored to place the concern on a sound basis of operation, but the recent slump in business brought about the present state of affairs. The creditors, while firm in their belief that the concern would eventually retrieve its fortunes, were not satisfied with the progress that was being made, and so forced the liquidation processes.

The present directors of the O'Bannon Co. are George H. Clough, Boston, president; Andrew F. Carter, Boston, vice-president and treasurer; Eliot Freeman Macarney, Providence, assistant treasurer; W. O. Willman, secretary, and Urban F. O'Brien, Providence, chief accountant.

Rhode Island Notes

After a shutdown of several weeks, due to the lack of orders, the wire drawing department of the National India Rubber Co., Bristol, resumed work on July 31 and the following Monday the entire wire division started up on a four-day schedule, giving employment to approximately 270 employes. These workers, however, returned at an average reduction in wages of 18 per cent.

The Keds department will not resume operations until around the first of October, at which time the employes will be engaged at a similar reduction in wages as that of the wire division. At the present time expert sample workers are producing 700 cases of sample canvas footwear weekly.

During the long period of inaction at the plant every effort is being made by the management to assist the operatives in weathering the period of enforced idleness. The industrial relations department secured the list of positions open in a number of the summer hotels in southern New England and, as far as possible, employes were placed in these positions, which as a rule will continue until about the middle of September. Besides this the heads of some thirty of the neediest families have been given employment at the factory, cleaning and renovating the plant, overhauling machinery, and making general repairs so that when the factory does resume everything will be in readiness.

One of the busiest industrial plants in Rhode Island is the Columbia Narrow Fabric Co., at Carolina, in the southern part of the state, where a big mill property has been established and is being rapidly developed. Not only has the mill property been established upon the most modern plans but the management has taken an especial interest in the welfare and comfort of its employes, with the result that a model community is being built up. Nearly fifty new cottages, many of individual bungalow type, have been erected by the company for its employes during the past year and now the new streets are being laid out. A complete new electric street lighting system has been installed in the Columbia Heights Park, as the new community is designated. Further improvements will include landscape work and the planting of shrubs, bushes and hardy plants in the parkways in the early fall under the direction of a skilled landscape engineer.

Upon recommendation of Chief Alberic Chevalier, the Board of Fire Wardens of the Warwick and Coventry Fire District have voted to purchase 1,000 feet of new fire hose.

E. F. Hill of the Hill Rubber Co., Philadelphia, Pennsylvania, has been spending his vacation at the Garden House in Jamestown.

The Newport Aldermen have voted to advertise for bids for 2,000 feet of chemical hose of the best grade.

The Rubber Trade in Massachusetts

With some rubber plants in full operation, and practically all reporting steadily improving business, the low ebb of the recent depression seems to have been definitely passed. The happy outcome of the London reparations conference has done much to restore the optimism of Massachusetts rubber men, who believe that a period of prosperity may be confidently expected to follow the presidential election.

Meanwhile the improvement already noted in a seasonally dull month is distinctly encouraging. Following the annual summer shutdowns rubber footwear plants are again in operation and have shared the improved conditions which have developed throughout the footwear industry, and which also applies to heels, soles and cements as well. Tire sales and production are again advancing stimulated by reduced prices and depletion of stocks.

More activity is reported in mechanical goods and automobile topping. The volume of insulated wire and cable production is being well maintained. Druggists' sundries and waterproof clothing sales are still slow but promise more activity when the normal early autumn demand begins. Numerous new rubber specialties are now increasing the sales volume of both reclaimers and regular rubber goods manufacturers.

Crude Rubber Receipts in Boston Increase

A marked increase in receipts of crude rubber at the port of Boston has been noted since the delegation from the Rubber Association of America visited this city in June as guests of the Maritime Association of the Boston Chamber of Commerce to investigate dock and freight terminal facilities. From July 25 to 30 inclusive heavy shipments of crude rubber were discharged from six steamships. Quantities of rubber from the freighter "Oanfa," destined for Akron, Ohio, doubtless would have been landed here to be forwarded over New England railroads were it not for the differential of 3 cents per 100 pounds in favor of Baltimore in rail rates to Akron, the "Oanfa" proceeding to Baltimore to land 840 cases and 6,044 bales.

Crude rubber imports for the month of July through the port of Boston amounted to 1,620,221 pounds valued at $340,993, compared with 837,461 pounds valued at $221,095 in July, 1923; 999,705 pounds valued at $138,563 in July, 1922, and none in July, 1921. July imports this year also included 46,872 pounds of gutta percha valued at $5,956, compared with none in July of the three preceding years.

Boston Rubber Pavement

Heavy traffic, both motor and horse-drawn, has thus far produced no appreciable signs of wear on the rubber pavements of the Northern Avenue bridge. It is realized, however, that the real test will come with the severe temperature changes of winter. If the paving passes this test satisfactorily it is proposed to rub-

berize the paving of the principal bridges of Boston and the streets about the Boston City Hospital. The cost of the rubber paving on the Northern Avenue bridge was approximately $13 per square yard. To have paved Harvard bridge with this material, as was proposed, would have cost about $157,000, against about $460,000 for wood blocks, $456,000 for granite blocks and $336,000 for vitrified bricks.

Reclaimers Developing New Outlets

While the rising crude rubber market and improving industrial outlook seem to forecast an increased demand for reclaimed rubber, the reclaimers of Massachusetts, like those of the rest of the country, are not lying idle awaiting the return of better business. Most of them are gradually developing outlets for their output by themselves becoming manufacturers of new and various rubber goods specialties in which reclaims form a large part. Broadening their business in this manner has tided them over the recent period of low crude rubber and business depression and promises to provide a permanent anchor to windward whatever the future crude rubber market and condition of the finished goods trade may develop. The world owes much to the reclaiming industry for the merit and variety of its rubber goods products, and however good the reclaiming business may become it is hardly to be expected that reclaimers will abandon the business in rubber specialties which they have built up.

Massachusetts Notes

The Metropolitan Air Goods Co., Athol, has been newly incorporated under the name of Metropolitan Camp Goods Co. The change was considered advisable because of the remarkable growth of the firm's business in pneumatic and rubberized camp accessories. The officers of the company are W. G. Nims, president; R. A. Whall, treasurer and general manager; and W. L. Duncan, secretary.

The rubber footwear plants of the Boston Rubber Shoe Co., Malden, and the American Rubber Co., Cambridge, both subsidiaries of the United States Rubber Co., resumed operations on August 4, following a shutdown of five weeks' duration.

The walkout of employes following a wage cut in July by the Panther Rubber Manufacturing Co., Stoughton, was of short duration, and following the week-end the plant was again in operation.

The Alfred Hale Rubber Co., Atlantic, reports a busy season with a gratifying demand for both its "Rajah" crêpe and "Cutlerite" composition soles and "Hale" heels.

Following its annual summer shutdown the plant of the Hood Rubber Co., Watertown, is again in full operation in all departments. The sustained production volume of this company throughout the depression period has been remarkable. A rubber reducing corset is a new product of the firm.

The Converse Rubber Shoe Co., Malden, has also had a good year, considering business conditions, and has actively resumed operation after the usual summer shutdown with a satisfactory booking of orders. The business of the Converse Tire Co. was never better.

Alex R. Howell has been appointed manager of sales promotion for the Hood Rubber Products Co., Inc., Watertown, Massachusetts.

ALASKA PURCHASED FROM THE UNITED STATES DURING JUNE, 1924, 14,578 pounds of coated and waterproofed goods, value $12,250. Similar importations by Hawaii included 9,427 pounds, value $4,689; while Porto Rico's share was 9,315 pounds, value $6,957. For the six months' period ended June 30, 1924, the totals were: Alaska, 79,700 pounds, value $54,981; Hawaii, 65,857 pounds, value $40,529; and Porto Rico, 37,736 pounds, value $24,740.

The Rubber Trade in Ohio

Perhaps never before in the history of the tire industry has the latter part of the summer witnessed such an increase in output as has been registered in Akron and nearby territory during the past month. At this writing the increase in production continues, although it is believed that in a very short time the movement will be completed. It is estimated that the daily production will reach 85,000 tires on the present movement, and some optimistic observers express the opinion that the district's production ticket will exceed 90,000 when the peak has been reached.

Regarding the duration of the present situation, it is believed in some quarters that the production program can be maintained at its high mark through the fall and winter season. Others, however, believe that it will be necessary to decrease production some time in October for a short time and later take up the fall schedule.

The unprecedented demand for tires at this season of the year has brought about some new conditions, one of which is that it would be better during normal times to go into the summer months with too many rather than too few tires. The cost of increasing production during the summer months when outputs have been curtailed for the season is exceedingly large.

The cause for this increased demand for tires at a season when it was believed there was an overproduction, is a matter of much speculation but it is generally admitted that the tire industry curtailed production a month early this year. This action was taken in conformity with the estimates that manufacturers and dealers had approximately 19,000,000 tires in stock. It seems now that these figures were too high; however, the companies had sufficient faith in them to decrease output when normally the factories should have been kept on April schedules throughout May and into June.

In other departments there has been a healthy increase in production. Industries which have been working on low schedules are putting their plants in order and are buying larger quantities of mechanical goods. Shoe and boot departments have felt an increase in business corresponding with the approaching season, and the same may be said of druggists' sundries. The novelty and toy business continues to be good. Rubber reducing girdles, which are being produced here by one of the larger companies, continue to fulfil the early promises of this specialty.

Development of the Six-Wheel Bus

The new six-wheel bus to be made by the newly organized company of which Charles M. Schwab, president of the Bethlehem Steel Co., is chairman of the board, was perfected by the Goodyear company several years ago. This was the result of the perfection of a six-wheel truck which was used for commercial purposes by the Goodyear company. C. M. McCreary and E. W. Templen, former Goodyear executives who were closely associated with the development of this bus, are closely affiliated with the new company.

National Tire Dealers' Meeting

More than 4,500 tire dealers are expected to attend the annual convention of the National Tire Dealers' Association, which will be held in Akron November 18, 19, and 20, according to Arthur Roderick, Akron dealer, who has charge of the arrangements for the convention. Literature regarding the city itself and the rubber industry here is being mailed to the delegates. All the rubber factories in the city and the Chamber of Commerce will cooperate in the entertainment of the visitors.

Six-Ply Balloon Tires?

During the month it has been learned that some of the larger tire manufacturers are experimenting with a six-ply balloon tire and that it is possible that this type may be placed upon the market during the next year. This number of plies, it is stated, will

overcome some of the defects of the present tire. Nothing official is as yet available regarding this new tire. The present balloon casing, as is well known, has four plies of fabric.

General Plant to Be Enlarged

The General Tire & Rubber Co., Akron, Ohio, is constructing three additional wings which will increase factory capacity by 50 per cent. Just a year ago the addition of three wings became necessary, as well as a new power house a month ago. The present improvements, which will cost about a third of a million dollars, will include a mill room and a tire room, while the third wing is planned for miscellaneous operations. The company's general offices are also to be enlarged.

Sales during the present year have made it the most notable one in the history of the organization, these sales being based, however, on consumer demand through the dealer. In a letter to the salesmen concerning the increase in the company's orders, William O'Neil, president of the organization, said:

"We believe you fully realize the necessity of confining shipments to our present distributers at this time. Our previous action in turning down all new business in March, April and May of this year and the completion of our new power house recently enabled us to stay somewhat even with the requirements of our distributers, but we find that we have under-estimated the rate at which their demand is growing and it is again necessary for us to adopt the policy of restriction against new accounts."

Ohio Notes

C. W. Seiberling, vice-president of the Seiberling Rubber Co., was honored last month when a 15-ton rock with a dedicatory tablet was placed on the Goodyear athletic field in Akron by the employes and management of that company. During his régime at Goodyear, C. W. Seiberling was the official connecting link between the men and the company and the dedication of the field to him is in appreciation of his welfare work.

The Mason Tire & Rubber Co. is reported to be adding men gradually to its forces and to be making more than 5,700 tires a day in its Kent and Bedford plants. Operations are said to be on a profitable basis. New economies in production and distribution are being constantly introduced.

More than 30 American college graduates have been employed by the Firestone Tire & Rubber Co., Akron, Ohio, since the graduation season. The students represent all branches of study, including advertising, selling, administration, and technical branches. The young men are started in their careers in the rubber industry in factory jobs, thus learning the business from the ground up.

Announcement has been made by Attorney Willis Bacon that he has purchased for clients, whose identity has not as yet been announced, the good will, patents and other intangible rights of the Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio. The purchase price is given by Attorney Bacon at $25,000, although the original offer was $20,000.

The American Rubber Export Co., Metropolitan Building, Akron, Ohio, was incorporated June 16, 1924, as the successor to the Rubber Manufacturers' Export Association. The new organization will operate mainly as jobbers, and will handle the same lines of goods as its predecessor, but with the addition of some automobile accessories. Executives include Walter C. Cassidy, president, and Oliver C. Moles, vice-president.

Offices have been opened at 320 Ohio Building, Akron, Ohio, by the Marlboro Cotton Mills, McColl, South Carolina, specializing in the production of mercerized yarns and tire fabrics. A. P. Lloyd will be the direct mill representative in charge of this branch.

On August 1 William F. Zimmerli became associated with The B. F. Goodrich Co., Akron, Ohio, his duties including work in the production laboratories of that organization.

The Williams Tire Co., Akron, Ohio, reports very satisfactory business during the last eighteen months. C. E. Williams is president.

Officials of The B. F. Goodrich Co. have confirmed the report current here for some time that the company owns a fourth interest in the Continental Rubber Co., of Hannover, Germany. The interest was acquired two years ago, but until now the public has not been informed of the purchase. Goodrich now owns a subsidiary in Canada, France, England and Germany. The plant in Japan was destroyed during the Yokohama earthquake a year ago.

The Mohawk Rubber Co., Akron, Ohio, has purchased additional equipment to further develop plant output. It is reported that the company's business is the best in its history, and that future prospects are very bright. The following changes have been made in the company's executive personnel: Ray E. Bloch has been elected treasurer, succeeding W. J. Cope, resigned; B. J. Brooks has been made assistant treasurer, while H. H. McCloskey has been appointed secretary, succeeding M. E. Mason, resigned. Other officials include: S. S. Miller, president and general manager, and Francis Seiberling, vice-president.

The Cleveland, Ohio, office maintained by the Southwark Foundry & Machine Co., 400 Washington avenue, Philadelphia, Pennsylvania, is now in charge of F. H. Smith, as successor to the company's former Cleveland representatives, Stewart Bolling, Jr., and H. D. Andress.

Howard A. Forrest, who has successively acted as superintendent at the plants of the Mason Tire & Rubber Co., the Erie Tire & Rubber Co., and the Virginia Tire & Rubber Co., is now serving in the same capacity with The Talbott Rubber Co. The latter organization, which is headed by Roger A. Houston, maintains a factory at Dayton, Ohio, and offices at Springfield, Ohio.

J. A. Glaspy has joined the sales forces of The Polson Rubber Co., 1783 East 11th street, Cleveland, Ohio. He will be in charge of sales of Polson-McWade tubes, his territory covering the entire section of the country east of the Mississippi River.

The Premier Rubber Manufacturing Co., Dayton, Ohio, has increased its holdings through the purchase of an adjoining building formerly occupied under a lease. The company's manufactures consist of mechanical rubber goods, rubber heels and hard rubber and condensite products.

Offices of The Aluminum Flake Co. were on September 1 removed from Akron to the company's manufacturing plant at Barberton, Ohio.

L. N. Cornell, formerly associated with the Mason Tire & Rubber Co., has been appointed superintendent of The Standard Tire Co., Willoughby, Ohio, succeeding W. P. Voth.

New equipment is to be installed at the plant of The Thomas Rubber Co., Wooster, Ohio, following which the output in one line of tires alone will total 425 a day. The company manufactures "Corinthian" and "Cordova" cord tires, as well as a line of "Thomas" cords and balloon casings. W. S. Thomas is president.

ADJUSTABLE INSERT FOR MACHINE MOUNTING

For fastening machinery or other equipment to concrete floors, walls, or ceilings without the use of bolts embedded directly in the concrete, a new adjustable bolt insert has been designed.

This insert permits adjustment of the bolt position after the concrete has set. It consists of a cast-iron housing with a tapering body, containing a rotatable bolt carrier T-slotted to take the head of a standard machine bolt, permitting a 5/8-inch movement of the bolt from the center. These inserts, which are available for 3/8 or 1/2-inch machine bolts, have holding power when embedded in concrete.—The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.

The Rubber Trade in the Midwest

Activities of Link-Belt Organization

Following the considerable extension of its business during the last five years, the Link-Belt Co., 910 South Michigan avenue, Chicago, Illinois, has recently made some important changes in its executive personnel. The chairman of the board has been made the chief executive officer of the company, and an executive committee of four has been created to act in an advisory capacity to the officers. The members of this committee include: Charles Piez, chairman of the board and chairman of the executive committee; Alfred Kauffman, newly elected president; Staunton B. Peck, senior vice-president; and Thomas B. Marston, a member of the board of directors.

Changes in Cutler-Hammer Personnel

The manufactures of the Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, are in future to be handled as two separate classes: engineering and merchandising products, with A. H. Fleet in charge of sales of the latter class of goods. T. D. Montgomery is to be in charge of engineering sales, with headquarters at Milwaukee.

Other changes include the appointment of C. W. Yerger as manager of the eastern district, with J. M. Fernald in charge of the company's Boston office. J. U. Heuser will be in charge of a branch sales office recently established in Milwaukee, while H. L. Dawson will continue to act as manager of the main sales office at Chicago.

Midwest Notes

William L. Burgess has been appointed general manager of sales for the Century Rubber Works, 54th avenue and 18th street, Chicago, Illinois. This organization, which reports good prospects for the year, has erected for warehouse purposes a plant addition covering approximately 25,000 square feet.

On the first of June The Mason Tire & Rubber Co., Kent, Ohio, discontinued its Indianapolis branch, and The Gordon-Mason Tire Co., 621 North Illinois street, Indianapolis, Indiana, was organized to take over the local business of the company. The new concern is headed by F. F. Gordon and J. W. Marshall as partners, the former having been previously associated as branch manager with the Hood Rubber Co.

P. B. Lawson is in charge of the branch maintained at 112 Wabash avenue, Terre Haute, Indiana, by the Goodyear Tire & Rubber Co., Inc., Akron, Ohio.

The eleventh sales division of the Dunlop Tire & Rubber Co., Buffalo, New York, has been opened at Kansas City, Missouri, with Charles P. Stearns in charge. The new division will serve merchants in parts of Missouri and Montana, and in Iowa, Kansas, Utah, Wyoming, Colorado, and Nebraska.

Seiberling tires exclusively are carried by the Fankell Tire Co., 124 West 14th avenue, Denver, Colorado. This distributing organization, established five years ago, reports excellent business. It is headed by William Chase Fankell and Fred E. Fankell.

Lambert tires are being handled by The Rubber Products Co., which is carrying on operations at 351-353 South State street, Salt Lake City, Utah.

The Waldman Sales Co., 2044 Harney street, Omaha, Nebraska, handles Pioneer cord casings, Overland tires and tubes, and reports good business this year in its distributions throughout Iowa and eastern Nebraska.

Two establishments are being carried on by the Federal Tire & Supply Co., 509 Broadway, Milwaukee, Wisconsin, an organization which is doing a wholesale and retail business in pneumatic and solid tires, storage batteries, and several specialty lines of accessories. The store at 509 Broadway has been recently opened, while the other establishment, also in Milwaukee, is maintained at 345 11th avenue.

The Rubber Trade on the Pacific Coast

Despite increased cost of cotton and crude rubber, the price of casings on the Pacific Coast has been cut sharply. In fact, some of the smaller Coast manufacturers and not a few distributers of noted eastern and mid-western tires are considerably troubled by the price slump, and if it were to continue long the pinch would be serious. The reductions on some of the standard eastern makes of casings range from 5 to 35 per cent, mostly over 30. The cut in tube prices is even more acute; for instance, one size of a famous make which wholesaled a year ago at $1.55 is being sold at $1.05. Margins of profit have in many cases been replaced with decided losses.

Unit sales of tires are much better than a year ago, but as profits are negligible net returns are less than for a like period in 1923. Legitimate dealers, while deploring the price cutting are hoping that some good will come out of the rate war. Many more motorists than ever will take advantage of the low prices for tires of standard quality, and in getting better acquainted with dependable wares will cease patronizing "gyp" tire dealers.

Sales of rubber goods generally on the Coast during the mid-summer term eased up perceptibly, and while many retail distributers declare that they will buy only to satisfy urgent needs until after the presidential election, others have begun to place substantial orders for early winter delivery. In the rubber shoe trade conditions still remain peculiar. Last winter was unusually dry and retailers had some stock left over; hence they are timid about ordering fresh supplies. If a very rainy season should be experienced on the Coast, manufacturers say a rubber footwear "famine" is inevitable as they could not possibly supply the demand so suddenly made. But a needed lesson may be taught retailers to place orders well in advance, so that manufacturers could serve them better and without taking any unreasonable risks in over or under-production.

An encouraging trade factor is the marked improvement in the agricultural position. Crops of various kinds on the Coast are very promising, and to the rubber industry must accrue many of the resulting benefits. Collections are said to be good and money is getting easier. Railroad companies have been buying more hose and other rubber goods than usual; rubber goods used in the building trade are finding a good sale, despite some slowing up in that trade; and the demand for rubber flooring in office buildings, hospitals, and other structures is reported to be excellent. There has been some slowing up in demand for mechanical rubber goods, but belting and garden hose orders are an exception to the general trend. The break in tire prices is bothering many makers of tire repair material, who thrive best when casings are relatively dear.

Pacific Coast Notes

A venture in the manufacture of carbon black from incinerated automobile tires is being made by Lee B. Mettler, combustion engineer, San Fernando Building, Los Angeles, at a plant in Riverside, California. Some of the material is being tried by Coast tire manufacturers. Mr. Mettler has applied for a patent on the process of producing carbon black from waste rubber and on apparatus for effecting the incomplete combustion of rubber and collection of the "soot". He claims that the material tests up for finer flocculence than standard grades of carbon black made from natural gas and that it can impart superior qualities in a new rubber "mix". It is also stated that, as illustrating the efficiency of the process and apparatus, fully 7 pounds of carbon black can be recovered from a 7½-pound 30 by 3½ tire.

Goodyear Tire & Rubber Co. (California), business for August, 1924, is reported as much ahead of that for the same month in 1923, and with prices near the top of the current market. The average daily production during the middle of the month at the Los Angeles plant was: Tubes, 7,000; casings, 4,500. The

plant has recently been the subject of a special study by F. W. Kubasta, manager of the insurance department of the parent Goodyear concern in Akron.

A new rubber-gutta percha enterprise, the Pacific Coast Golf Ball Co., Los Angeles, located in the Central Manufacturing District, will make high grade goods. F. M. Greenough is president; E. C. Huyck, vice-president; and W. C. Peters, secretary and treasurer. Mr. Huyck, who will also be in charge of operations, is experienced in golf ball manufacturing.

A. A. Brown, vice-president in charge of syndicate operations for the Westinghouse Electric & Manufacturing Co., Pittsburgh, has been making a first-hand study of trade conditions on the Coast. He expects the market there to soon broaden markedly for rubber insulated wire and electrical equipment generally.

J. C. Lawrence, president of the Racine Horseshoe Tire Co., Racine, Wisconsin, was a recent visitor on the Coast.

The Mohawk Rubber Co., Akron, Ohio, has established a branch and warehouse in Phoenix, Arizona, tributary to the Los Angeles branch. J. T. Vaughan is in charge.

Hope of reviving the Coast Tire Co., of Oakland, California, is seen in the efforts of the stockholders to pay off the debts of the old company so that a fair amount of credit may be obtained for resuming business. Already a considerable sum has been raised by P. H. Stetson, the new president, and the temporary board of directors. The factory may be reopened this month, it is said.

The Sound Rubber Co., Tacoma, Washington, recently reorganized, is doing very well, according to John Buffelen, the new president. The concern makes Sound balloon tires and Sound Dispatch cord tires.

According to President John B. White, the Jack Tire & Rubber Co., Spokane, Washington, now has one of the most modern tire factories in the country. It recently installed machinery for making treads and has dispensed with hand building. The company recently got a copyright on the name "Jack" for its tires and tubes, which are selling well.

Southwestern Branch Manager J. B. Magee of the United States Rubber Co., Los Angeles, has returned from a vacation at Coronado Beach.

The Pacific Rubber Products Co., 149 Monroe street, Portland, Oregon, is finding a good sale for its guaranteed puncture-proof tires. The puncture-resistance feature is obtained, according to Manager P. A. Lambert, by inserting between the last two plies of fabric a tightly twisted cotton material rolled in cushion gum, over which are placed sidewalls and tread. It is cured on an air bag in steam jacketed molds. Arrangements are being made to set up a new plant in which the company will make all its materials. Dr. C. A. Stuart (originator of the tire) is president; William Smith, vice-president; Dr. R. N. Shelton, treasurer; and M. Beattie of Strubel & Beattie, attorneys, is secretary.

The Mason Tire & Rubber Co., Kent, Ohio, has appointed Catlin Wolfard, formerly Pacific Northwest branch manager, as Pacific Coast sales manager, with headquarters in San Francisco.

Modern equipment, new offices, show rooms and service department have been installed by the McCoy-Staley Co., 449 Twenty-Third street, Oakland, California, as well as a complete retreading and vulcanizing department. Only General cord casings are handled by the distributing company.

A new sundry jobbing concern, the Pease Sundry Co., is being established at Los Angeles, California, the temporary address being 406 Equitable Building. The new concern will specialize in merchandise salable to the drug, sporting goods, stationery and dry goods buyers of the Pacific Coast. A. V. Pease is president.

W. F. Beard has been appointed direct mill representative at 146 Dale avenue, Oakland, California, by the Marlboro Cotton Mills, McColl, South Carolina. The Marlboro organization specializes in the manufacture of mercerized yarns and tire fabrics.

CAMACHINE SEMI-AUTOMATIC CUTTER GRINDER

Cameron slitting and rewinding machines, widely used in the manufacture of many rubber and other products, employ hard steel cutter wheels running against a flint hard backing roller. This action tends to flatten stored to perfect condition the cutters, which can be re- by means of the cutter grinder represented in the illustration.

Camachine Cutter Grinder

The grinder is a motor driven, semi-automatic machine which determines the exact bevel of the edges of Cameron cutter wheels, centering the cutting edge and grinding off just the amount of metal required to bring the cutting edge to the proper condition for operation. Inasmuch as these factors are not dependent on the human element, satisfactory results with the grinder are certain.—Cameron Machine Co., 61 Poplar street, Brooklyn, New York.

INTERCHANGEABLE PIPE FITTINGS

A complete line of structural pipe fittings has been designed for use with common wrought-iron or steel pipe in the erection of out-door or indoor electrical switching equipment. While primarily designed for electrical installations, they are equally applicable for the construction of racks, railings and bench or table frames. Pipe has long been recognized as a convenient material for structural work of this nature since it is light for its strength and has a symmetrical cross section which resists bending.—The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.

ELECTRIC LAMP LOCK

A sealed locking device has been perfected for safeguarding tipless electric light bulbs. This lock consists of a flange that fits over the top of the socket, to which is attached a heavy wire loop extending down and encircling the bottom of the bulb in a way that prevents removal of the lamp without breaking. When the bulb is burned out the lamp is broken, as it is of no value. The loop of wire is pushed up, removing the seals and exposing the nuts on the wire. These are released to allow a new bulb to be placed within the lock. This change of lamps requires about two minutes and the only tool needed is a small screw driver.—Smith-Pearson Co., Paterson, New Jersey.

UNITED STATES IMPORTS DURING THE FIRST SIX MONTHS OF 1924 of druggists' rubber sundries totaled 62,913 pounds, value $74,359, and came mainly from the following sources: England, far outstripping other countries, sent 32,996 pounds, value $58,887; while Germany's exports of such goods totaled 14,725 pounds, value $5,759. Canada sent 16,109 pounds, value $9,658. Small shipments were also received from Scotland and Japan.

The Rubber Trade in Canada

MANUFACTURERS of rubber footwear have commenced on fall orders, which they claim are considerably below the actual requirements of trade for next season. Retailers seem to be affected by the general tendency to curtail purchases very far ahead and forget that it is absolutely necessary for footwear manufacturers to have sufficient orders ahead to work economically. In another month the sporting goods season will be over and it remains to be seen how the retailers' stocks will look. Weather prophets promise a warm September, which if true will clear retailers' shelves of all sporting footwear. Balloon tires have apparently caught the motoring public's attention, one dealer stating to the correspondent of THE INDIA RUBBER WORLD that they had been swamped with orders for the new balloon tires. Rubber reducing corsets are being extensively advertised and demonstrated at Montreal's leading department stores, but the sale as yet is rather limited.

Canadian National Exhibition

The following rubber firms will exhibit at the Canadian National Exhibition to be held in Toronto August 23 to September 6: Ames Holden Tire & Rubber Co., Ltd., Kitchener, Ontario; Gutta Percha & Rubber, Ltd., Toronto; and The Miner Rubber Co., Ltd., Montreal. A display of Canadian-made shoes and allied products will be sponsored by the Shoe Manufacturers' Association of Canada. Last year the turnstiles indicated that 1,493,000 people passed the gates and this year it is confidently expected that the two million mark will be in sight if not actually reached.

Ames Holden Organization Prospering

During the first half of the present year the business done by the Ames Holden Tire & Rubber Co., Ltd., Kitchener, Ontario, has increased approximately 100 per cent as compared with the corresponding period of 1923. After all charges, including depreciation, taxes, and allowance for income bond interests, have been deducted there is an encouraging profit shown, as contrasted with a slight deficit during the first six months of 1923. The company is finding excellent markets for its tires and footwear.

New Dunlop Tire Prices

The new lower prices on tires show some variation among different manufacturers, but in all cases the decrease is from 7½ per cent to 10 per cent. As an example, the new Dunlop list shows prices on 30 by 3½-inch tires as follows: clipper cord casings, $10; traction cord, $12; clipper, ribbed and special fabrics, $8; traction fabric, $10. Other sizes are advanced in proportion. The regular gray tubes in this size are now $1.50 and the extra heavy gray $1.85. The balloon tires to fit cars using this size clincher rims cost $17, with tubes for Fords at $2 and for Chevrolet, Overland and Star at $2.85.

Canadian Notes

A recent comparison of prices on ½-inch garden hose during the past ten years shows that in 1914 this commodity sold at 13½ cents per foot, with the same price existing in July, 1924; the lowest quotation was that of January, 1923, when it dropped to 12¼ cents; the highest peak was reached in January, 1923, when 14 cents was obtained.

W. H. Semple, manager of the Maritime Provinces branch of the Kaufmann Rubber Co., Ltd., Kitchener, Ontario, died recently while on a fishing trip at Springside, Upper Stewiack.

C. W. Boyer of the Ames Holden Tire & Rubber Co., Ltd., has returned from a business trip to Vancouver, British Columbia, and other western points.

E. J. Parker, Miner Rubber Co., recently moved from Toronto to Sault Ste. Marie, Ontario. The Soo is rapidly becoming the headquarters of a number of Montreal, Toronto, and Western travelers who cover Northern Ontario.

F. E. Partridge, president and general manager of the Northern Rubber Co., Ltd., Guelph, Ontario, reports a large volume of rubber footwear sales featuring their reinforced toe and heel. The special "Gym" shoe of the basketball type, which has attracted favorable attention, has a molded sole which insures non-skidding qualities.

Rhino rubber footwear, which is a comparatively new arrival on the shoe market, has made good progress. The Ames Holden Tire & Rubber Co., Ltd., Kitchener, Ontario, the manufacturers, anticipate a heavy season's selling in their "Flash," a hookless fastener overshoe.

A. R. Kaufman with his family are in attendance at the British Empire Exhibition at Wembley. Mr. Kaufman is the present owner and general manager of the Kaufman Rubber Co., Ltd., Kitchener, Ontario.

The Goodyear Tire & Rubber Co. of Canada, Ltd., Toronto, Ontario, is providing dealers with toy balloons in assorted colors, printed with an illustration of two Goodyear balloon tires and with the dealer's name and address. At a price of $3.25 a gross the same balloons showing the two tires but without the dealer's name and address are sold in half-gross lots at $1.75 for the half-gross.

The I. T. S. Rubber Co., Ltd., West Toronto, Ontario, is receiving considerable publicity due to the fact that the Canadian Olympic World's Amateur Hockey Champions took with them to Chamonix a supply of I. T. S. rubber hockey pucks and had them authorized as the official puck for use in all the world's amateur championship matches.

At the recent annual meeting of the Export Club of Toronto, Ontario, the following men connected with the rubber industry were elected to office: P. D. Graham, The Goodyear Tire & Rubber Co. of Canada, Ltd., and L. L. McMurray, Gutta Percha & Rubber, Ltd.

The Quebec Rubber Co., Ltd., Quebec, Quebec, has been incorporated with a capital stock of $1,500,000 to manufacture and deal in rubber, gutta percha and all rubber articles.

Spring step rubber heels manufactured by the Canadian Consolidated Rubber Co., Ltd., Montreal, are being heavily advertised in large display space four columns by 200 lines, in all the leading newspapers throughout the Dominion.

Dominion Corset Co., Ltd., Quebec, Quebec, has secured the Canadian manufacturing and selling rights for Madame X rubber reducing girdle and anticipates handling a large quantity of these goods throughout the Dominion.

J. Erle Jones, sales manager of the general mechanical division of the Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario, is most optimistic over the future of golf sales and states that the increasing demands from the various countries where the game is played has been taxing the golf ball manufacturing department to the limit.

The following item appeared in the *Montreal Gazette*, August 11, 1899, twenty-five years ago:

Rubber-tired vehicles are becoming quite prominent in Montreal. During the past three weeks seventy-five carriages, some the property of private individuals, have been fitted with rubber tires. The rubber tire is being introduced by the A. Jennings Co., which has secured contracts for placing tires on several drays and heavy wagons.

The Rubber Trade in Europe

Great Britain

THE lowering on August 1 of the exportable allowance from Malaya and Ceylon of first-grade plantation rubber from 60 to 55 per cent of the standard production has called forth many comments from various sources. The *Financial Times* says that "the much discussed restriction scheme is now entering upon its most critical test" and states further:

"What is known as standard production amounted last year to 335,000 tons, of which 5 per cent is roughly 16,000 tons per annum, or 4,000 tons per quarter. For the next three months we are therefore assured of an additional curtailment of 4,000 tons. Should the average price between this and October 31 be under 1*s.* 3*d.* the exportable allowance will be reduced to 50 per cent, representing a further decline of 8,000 tons in supplies, making 12,000 tons in the six months. If the period November-January fails to provide the necessary average the market will have to face a reduction of no less than 12,000 tons during the quarter February-April. It will be seen, therefore, that if the average price during the next two quarters fails to reach 1*s.* 3*d.* supplies will be reduced by an aggregate of 24,000 tons between this and the end of April next. This reduction, it may be noted, is additional to that which has been going on under the 60 per cent scale, now reduced."

The editorial concludes, however, with a mention of the improved market prospects and the better trade demand, largely on American account. Elsewhere attention is drawn to the remarkable recovery in rubber plantation shares; to the reports from rubber producing companies, which continue to be encouraging; and the general upward movement in the price of the commodity. Optimists in general believe that the statistical position of the raw product, already strong, will be still further strengthened by the recent developments in connection with restriction measures.

Winston Churchill Reviews Restriction Scheme

At the first annual dinner of the Incorporated Society of Planters of Malaya which was held at the Hotel Cecil in London on the evening of July 18 the chief guest was Winston Churchill, who reviewed the question of rubber restriction. He mentioned the fact that as Colonial Secretary, and under the aid and guidance of Lord Stevenson, he had recommended to the Cabinet of the day the restriction scheme. He had felt very strongly that a great industry like the rubber industry, with £100,000,000 or £150,000,000 of invested British capital, required the support of the Colonial Office. Such an industry was also to be considered in the matter of the payment of the war debt to America, although however fairly the country's obligations to the United States were judged, England was under no obligation to supply her American friends with rubber at a loss.

Referring to former great fluctuations in the price of rubber, Mr. Churchill continued: "It was not with the idea of raising prices to a monopoly pitch or with any idea of restricting the permanent growth of rubber production throughout the world that the restriction scheme had been embarked upon. It was with the idea of finding stability and to steady the level of price which would permit of the scientific development of the plantations and enable the industry to be placed upon a sure and solid foundation." In order that a fair profit might be made, the figure had been put at 1*s.* 3*d.* a pound, but that had not yet been realized, and whether it would be under the present plan Mr. Churchill could not say. He believed that the restriction scheme, whatever else it had accomplished, had enabled the planters to come together and speak with united voice. He hoped that on the basis of the restriction plan it would be possible to deal effectively with the difficulties of an industry which was of such importance to the British Government and the British Empire.

G. L. O'Hara Hickson, as chairman, made a suitable response to Mr. Churchill's address. Other addresses were made by Sharpe Smith, who proposed "The Rubber Industry," and by H. Eric Miller, chairman of the Rubber Growers' Association, who replied to the toast. The latter felt that the watchword of the planter should be "efficiency," and that if the industry in general was to be kept economically sound the costs of production must be kept as low as possible, restriction difficulties notwithstanding. Above all he had faith in the rubber industry, and believed that his faith was well founded.

Wembley Commemoration Dinner

The Wembley Commemoration Dinner, held in London on July 22, and to which brief reference was made in the August issue of THE INDIA RUBBER WORLD, was especially memorable as an occasion for bringing together the various branches of the rubber industry. About 150 guests were present, including many who are identified with rubber interests as men of prominence.

After the toast of "The King" had been duly honored, the chairman, Alexander Johnston, referred to the first attempt, in 1823, a little over a century ago, to use rubber for manufacturing purposes, when Macintosh took out his first patent for waterproofing fabrics with rubber. Mr. Johnston then mentioned some of the difficulties the rubber industry had been meeting in recent years and stressed the need for cooperation by all branches of the trade, saying that their various interests are, or should be, identical.

Replying to the toast "The British Rubber Industry and the Rubber Association," H. Eric Miller, chairman of the Rubber Growers' Association, also mentioned the need of cooperation, but particularly referred to the advantage of stability in the price of rubber. He believed that the rubber manufacturing industry could make much more rapid strides if they knew that rubber was going to be a reasonable purchase not only today but three months hence, and perhaps six months hence. Philip H. Lockhart, ex-chairman of the India Rubber Manufacturers' Association, also replying to the toast, referred to the British Empire Exhibition as "a magnificent achievement of which every Englishman has the right to be proud," and said that rubber men were glad that the Exhibition was associated with the name of Lord Stevenson. In the course of his remarks Mr. Lockhart paid a tribute to the American rubber industry, saying that he had never met a more level-headed, straightforward set of men than the rubber manufacturers and brokers in America.

In the address following Sir Eric Geddes gave some figures showing the growth of the rubber industry and then mentioned some of the technical problems confronting that industry. Referring to the United States, he said that it was an outstanding and pleasant feature of American business relationships within an industry that, although their competition and rivalry were keen, they went further than did the British in the exchange of the economic results of their working, and he felt he might almost say without fear of contradiction that those results exchanged in that way were of untold and inestimable advantage to the industry.

Colonel S. Sealy Clarke, chairman of the British Rubber Tire Manufacturers' Association, then proposed "The Trade Develop-

ment of the British Empire," Sir Sydney Chapman replying to the toast. The final toast of the evening was "The Chairman," proposed by D. F. L. Zorn.

British Notes

The display at the British Empire Exhibition at Wembley as prepared by the United States Rubber Co., 1790 Broadway, New York, N. Y., is being conducted by the London branch of the export company through the Dominion Rubber Co., the Canadian subsidiary of the United States organization. Among the articles which are most prominently displayed are waterproof rubber footwear and rubber-soled canvas shoes, automobile tires, and mechanical goods. The last mentioned line includes transmission and conveyor belting; water, air, oil and suction hose; packing; matting; etc., while a Royal Cord automobile tire, Traxion Tread motorcycle tire and Traxion bicycle tire with sections of all sizes, latexed fabric, and all forms of crude rubber complete the tire display.

Latex Developments Limited, with offices at 7 and 8 Great Winchester street, London, E.C. 2, has been formed for the purpose of taking over a number of patents relating to the development of latex products, these patents including among others the following: Improved methods of mixing rubber compounds; waterproofing articles by the use of rubber latex; improvements relating to the treatment of leather and leather waste, felt, etc., and also improvements in the manufacture of boots and shoes, plimsoles, crêpe rubber soles, tennis balls, the rubber waterproofing of fabrics, etc. A subsidiary organization, to be known as Fibrok Products, Limited, is especially concerned in the use of "Fibrok" as a throughsole for boots and shoes made with a crêpe outersole.

An important auction sale has been announced to take place at Winchester House, Old Broad street, London, E.C. 4, on November 24 and 25, 1924, when disposition will be made of plantations, town sites, factory and other properties in the Cameroons, West Africa. Rubber plantations are included among the various properties, while facilities for operation include a plentiful supply of labor, easy means of transport, etc. Further particulars may be obtained from F. Evans, government agent at the offices of the auctioneers, Hampton & Sons, 20 St. James Square, London, S. W. 1.

France

Etablissements Hutchinson

Etablissements Hutchinson reports net profits of 12,040,498 francs for 1923-1924, an increase of 226,473.36 francs over those for the preceding year. Of these profits 8,271,965 francs (including a balance of 1,375,681.24 francs from 1922-23), will be distributed among shareholders.

This concern was formed in 1918 with a capital of 5,000,000 francs. At present the capital is 15,161,100 francs. Among the firm's products are rubberized cloths and apparel, footwear, technical goods, tires, and the Kegresse caterpillar belts with which Citroen's vehicles were equipped during their passage across the Sahara. The company has factories at Langlée in France, at Mannheim in Germany, besides a branch in Milan known as Societa Industria Gomma e Hutchinson. The commercial organization includes some thirty branches in Europe and North Africa.

French Notes

During May, 1924, France exported 2,603,000 kilos of rubber goods, value 76,684,000 francs. The greater part of these goods consisted of tires, which amounted to 2,112,100 kilos, value 62,941,000 francs. England, Belgium, Switzerland and Spain were the largest buyers of French tires. Footwear shipments were 223,600 kilos, value 4,763,000 francs; belting, hose, and packing, 188,400 kilos; rubber clothing, 26,700 kilos; rubberized cloth, 17,200 kilos. The neighboring European countries took most of these exports. As compared with statistics of April, 1924, these figures show a considerable increase as far as tires, tubes and footwear are concerned, but a decline in the other items mentioned.

It is reported that the Compagnie Française du Caoutchouc has made an agreement with the Ajax company regarding a license to manufacture the Ducasble tire in America. The French firm has already installed its products with the Salga concern in Italy. In France, the Thiant factory makes technical rubber goods, while the Halluin works produce the Ducasble tire. For 1923, profits were 1,162,637 francs.

Germany

For some time past it had been noted that exports were falling off, while at the same time attention was called to the increased appearance of foreign goods in the local stores. The extent of this shifting of trade is indicated by latest official statistics, which show that shipments of soft rubber goods declined from 6,041,800 kilos in the first four months of 1923 to 4, 987,100 kilos in the corresponding period of 1924, and of hard rubber goods from 317,400 kilos to 292,100 kilos.

Germany is one of the chief exporters of belting, hose and packing, therefore, the decrease in these articles from 919,600 kilos in 1923 to 679,500 kilos in the first four months of 1924 came as a disagreeable surprise to local manufacturers. America and France seem to have secured Germany's lost trade in these lines. Exports of pneumatic tires and of footwear also fell off. The Baltic states (Lithuania, Finland, Esthonia, Latvia), Danzig and Sweden are the chief importers of German footwear, Lithuania alone taking 92,300 kilos, or nearly half of the total exports of rubber shoes. The decline in this line is probably due in part at least to the fact that Soviet Russia is trying to cover the needs of the Baltic territory.

The imports into Germany rose from 95,600 kilos in the first third of 1923, to 165,400 kilos in 1924. The increase in rubber thread alone was from 4,400 kilos to 30,900 kilos.

The imports of crude rubber fell from 6,640,000 kilos in the first quarter of 1923 to 3,641,600 kilos in 1924. Scrap imports also dropped, but at the same time it should be noted that Germany is taking increasing quantities of scrap and old rubber from the United States, total shipments from America in the first half of 1924 amounting to 1,804,429 pounds, value $62,060, against 1,194,692 pounds in the first half of 1923, and a total of 2,286,357 pounds for the year 1923.

This loss in trade is reflected here in many ways. There is again an increase in unemployment, and certain factories are once more on a part time schedule. Sales are numerous, underselling is rampant and all sorts of devices are resorted to and inducements offered to get customers. But sales remain disappointing. Recent discussions regarding the evacuation of the Ruhr district in the near future have raised new hopes. But on the whole, the condition is considered grave and means for remedying it are sought. There has been frequent discussion of the question of reorganizing the rubber industry and several plans have been suggested. It seems that a system of cooperation and specialization is favored whereby production will be greatly increased while the amount of labor and capital employed remains the same.

New Rubber Goods

Inflatable toys are as popular in Germany as in America and the list of novelties grows daily. Gustav Engel, Gummiwarenfabrik, Berlin W. 9, puts on the market a line of "Youpla" brand caricatures, inflatable and non-inflatable, which include Charlie Chaplin, Jackie Coogan, Poincaré.

At the seaside resorts, locks of rubber hair, really short lengths of rubber thread, may be seen peeping out from the sides of colorful bathing caps.

Textile collars, cuffs, fronts, cost more in the way of upkeep than substitutes of rubber, celluloid, or the like and the latter are

now produced in a variety of colors and patterns to match colored and striped shirts.

The firm of Händiges & Bresch, Barmen, has put on the market a new trouser-suspender, partly elastic and partly unelastic, specially designed for the comfort of stout men and appropriately designated *Korpulenz-Hosenträger* (corpulence suspender).

The Swiss firm Herona, Gummi-Aktiengesellschaft, Zurich, has applied for a German patent on a rubber cap for phone and radio receivers. Another invention for which patent has been applied for, is the *Rofix-Ring*, a grooved ring that is slipped over each end of clothes hangers to prevent slipping of garments.

German-Spanish Customs Rulings

The German and Spanish Governments have come to an agreement according to which German goods may enter Spain under the provisions of the second column of rates without further surtaxes. In addition to this a considerable number of German goods have been accorded a decrease in duty rates under the second column of up to 20 per cent. By this agreement the extra duty that Germany as a country with a low rate of exchange had to pay on goods exported to Spain is abolished.

Holland

The first annual report of the Propaganda Department of the International Association for Rubber and Other Cultivations in the Netherlands East Indies has just been received. On the committee of this section are Prof. Dr. G. van Iterson and Dr. A. van Rossem, both of the Government Rubber Institute at Delft. During its first year, the department's activities comprised the collecting and circulating of data regarding preparation, packing and utilizing of crêpe soles. Boot and shoe manufacturers were visited in order to introduce to them the new material, as a result of which an increasing number of Dutch factories are using rubber soles. The new material was also brought to the attention of the heads of trade schools for shoemakers. The school in The Hague succeeded in finding a better method of attaching the rubber sole than that recommended. The Government Rubber Institute at Delft in cooperation with the same school discovered a good method for finishing the edges of the sole as regards color and smoothness.

At present the want of a regular direct supply of sole crêpe from the colonies is a serious obstacle in the way of further expansion of the use of this material here.

Propaganda for latex paper has been suspended owing to the fact that the rapid oxidation of latex in latex paper results in the loss of mechanical improvement obtained through the use of latex.

The department was able to give valuable advice in the matter of laying rubber flooring. The department undertakes to test any samples of flooring for those intending to purchase, thus helping the buyer to secure the best material.

Rubber mats and carpeting are also receiving due attention. A list of all articles of rubber manufactured in Holland, together with the names of the factories, has been compiled.

The program for the year 1924 includes continued propaganda in the above directions and the study of uses for latex, preserving, packing and transportation of latex, as well as the use of rubber in the automobile industry.

FRENCH RUBBER INDUSTRY STATISTICS, 1913-1923

According to *Commerce Reports*, France's rubber industry has become of steadily increasing importance in recent years. Sales of rubber goods in 1923 (21,948 metric tons) were better than in 1922 (18,851 tons), and in 1921 (21,106 tons), and far above the prewar figure (6,930 tons). During 1923 these shipments of rubber goods to four leading countries were valued as follows: United Kingdom, 119,370,000 francs; Belgium-Luxemburg, 87,056,000 francs; Germany, 3,125,000 francs; and Italy, 18,269,000 francs.

French shipments to the United States of rubber goods included, during 1923, 9,179 automobile tires, value $74,017, while it is interesting to note the great increase during the first four months of 1924 to 101,852 tires, value $543,838. Large increases are also evident in the exports or reexports to this country of crude rubber from various French districts. Such exports from Bordeaux which totaled in 1922 only $333,476 rose to $1,330,283 in the year following. Crude rubber shipments to the United States from Havre were estimated in 1923 at $1,293,780, while reexports of this commodity from Marseilles, estimated at only $14,248 in 1913 and $21,647 in 1922, rose in 1923 to $91,030.

During 1923 France's imports from the United States of rubber manufactures totaled in value 13,277,000 francs; from the United Kingdom, 31,309,000 francs; from Belgium-Luxemburg, 9,008,000 francs; from Germany, 1,905,000 francs; and from Italy, 4,324,000 francs. From the United Kingdom France imported in 1923 crude rubber valued at 156,274,000 francs. Estimated in volume, France's imports of rubber goods from the United States in recent years are: In 1913, 80 tons; 1921, 375 tons; 1922, 638 tons; and in 1923, 502 tons.

First Tapping Year of Budded Hevea

In his detailed discussion of the growth and yield of a number of budded trees in the Cultuurtuin, Buitenzorg, Java, Dr. P. J. S. Cramer sets forth some interesting facts. He warns planters that newly budded stock must be carefully examined, as sometimes the bud dies shortly after grafting, but the stocks remain vigorous and send out a shoot that is frequently mistaken for the bud graft. This is especially apt to happen in gardens where cover crops hide the lower part of the stems.

Budded trees are on an average slower growers than seedlings, but scions of one mother tree have a more uniform rate of growth and tend to reach the tapping stage about the same time. This has the advantage of reducing the costs in the initial stages of tapping. Furthermore, by starting with material from a rapidly growing tree it is possible to obtain trees all of which will excel in this direction and so will keep ahead of seedlings in which the rate of growth varies much more.

As for the yields of budded trees, some groups gave especially high productions. At different times of the year the yields decreased, but still remained high. The average production per tapping cut of one group of budded trees was 16.9 grams, of two other groups 13.8 and 13.4 grams respectively. Output of trees from one mother was more uniform than was the case with seedlings. The lower the tapping cut was made on the bud grafts, the higher the yield, but about 3 centimeters above the junction of stock and scion the output decreased.

It was further found that the rate of growth and output of the stocks was strongly influenced by the scions.

Dr. Cramer leaves planters to draw their own conclusions from the data he sets down, but he advises them to make experiments with bud grafting and offers material for the purpose. During the first months of this year the Cultuurtuin already supplied 623 bud grafts and 881 meters of bud-wood.

In the Cultuurtuin new experiments are being carried out: greatly varying kinds of Hevea have been grafted onto each other. The possibility of uniting different kinds of trees permits the setting up of trees of which the root and stem possesses certain qualities which answer special purposes, particularly in connection with soil conditions. Experiments in bud grafting with newly obtained varieties of Hevea have been begun this year.—*Archief voor de Rubbercultuur in Nederlandsch-Indië*, June, 1924, 289-326.

"PNEUMATIC TIRES," by HENRY C. PEARSON. AN ENCYCLOPEDIA of tire manufacture, repair, rebuilding, machinery and processes.

The Rubber Trade in the Far East

Malaya

Restriction—For and Against

THE question of restriction was recently discussed in the Council Chamber by W. Lowther Kemp, who accused the government of not being sufficiently active in the interests of the rubber industry. He declared that a further examination of restriction was necessary and suggested that the Secretary of State should be urged to appoint a new committee similar to the Stevenson Committee for this purpose, but with the proviso that at least part of its deliberations and investigations should be conducted here on the spot.

In justification of his demand he pointed out that certain new facts had come to light since 1922, which if they had been available two years ago would have resulted in a very different attitude on the part of the Stevenson Committee. For instance, the world's potential production in 1922 was put at 400,000 tons, whereas it is now known to be nearer 550,000 tons. Again, it was estimated that British producers controlled over 70 per cent of the world's output, while 60 per cent would be more nearly right. Furthermore, the contribution towards the world's estimated requirements by foreign countries was put at 37 per cent, but it now seemed that they could supply at least 50 per cent, and were capable of rapidly increasing this percentage.

A very important factor, which in Mr. Kemp's opinion was not receiving any consideration, was the tendency of the planting industry to become a native industry. While rubber prices should be such as to encourage further investment of European capital, no more capital was needed as the world's further rubber demands would be supplied by the native industry. For this reason the government should institute an inquiry and if the danger described had a basis of fact, extension of cultivation should also be restricted.

Further Restriction Views

While most people feel that restriction methods need a thorough overhauling and correction where necessary, not a few frankly urge abolition. Thus A. E. Baddeley objects to restriction in the *Straits Times*. Restriction, he finds, bolsters up the inefficient at the expense of the efficient and helps to strengthen foreign competitors. If prices were inflated by restriction or a selling scheme, the immediate result would be retaliation by consumers, who would increase the use of substitutes and make determined efforts to foster other sources of supply.

With rubber free again, prices would at once drop, owing to a supposition that rubber would be more plentiful than before. However, a low price would cause cessation of tapping by numbers of natives in the Dutch colonies and in Malaya itself, while weak European estates would also be forced to stop activities.

So much for the anti-restrictionists. Those in favor of the measure are not altogether satisfied with it and believe it needs to be revised. At a meeting of the Rubber Producers' Association of Malaya a resolution expressing the opinion that the Rubber Growers' Association should urge on the government the advisability of appointing without delay a new committee to make an exhaustive examination of the working of restriction was unanimously carried.

Agricultural Bank for Malaya

A very interesting paper on cooperative societies and an agricultural land bank was read by Dr. R. M. Connolly at a public meeting in Ipoh and printed in the *Malayan Tin and Rubber Journal* of June 30, 1924.

Dr. Connolly comments on the slowness of the Rubber Growers' Association and touches upon restriction, which he thinks is a necessary but artificial stimulus that cannot last indefinitely. He proposes a system of cooperative societies in Malaya to grade, market and sell the product of the plantations. Similar methods have worked well in sugar, quinine, etc. To do something of the kind in Malaya, an agricultural organization must be formed which will include all the different branches of agriculture and promote measures of general utility, encourage the growth of cooperative societies, negotiate settlements, arbitrations and purchases of land, and finally give support toward the creation of an agricultural land bank, without which nothing can be done. The rules must include one by which no rubber is to be sold except through a district cooperative society. All rubber is to be shipped to London and sold through a central agency. There are to be no forward contracts, no sales of local dealers. Finally, all extensions are to be interdicted. In connection with the last point it is worthy of note that a number of companies in Malaya have been extending their acreages this last year, to the alarm not only of other planters, but of some of their own shareholders.

Restriction Statistics

The following statistics of rubber restriction have been sent out by the Controller of Rubber Exports:

	Total Exports British Malaya	Total Exports Restriction Area	Total Imports Foreign Rubber
March, 1924	22,294	14,020	8,269
April, 1924	20,551	10,759	7,909
May	19,674	13,597	7,259
Totals	62,519	38,376	23,437

DEALERS' STOCKS

	1924		
	March	April	May
Singapore Island	18,950	16,954	16,279
Penang	2,538	2,121	1,700
Totals	21,488	19,075	17,979

RUBBER FROM RESTRICTION AREA ON WHICH DUTY WAS PAID

	1924		
	March	April	May
Federated Malay States	8,589	5,869	7,916
Straits Settlements	1,718	1,324	1,583
Johore	2,514	2,531	2,805
Kedah	880	697	974
Kelantan	265	276	236
Trengganu	54	62	83
Totals	14,020	10,759	13,597

Stocks Afloat in Harbor—(May rubber declared in June). 53 tons. All the above figures are in tons.

Netherlands East Indies

Native Rubber

There is probably no recent event in the rubber industry that has so taken planters by surprise as the discovery of the fact that the native rubber industry had expanded to such an extent that it was able to export over 50,000 tons of rubber during 1923. Although everyone knew that as a result of the encouragement from the government, the natives had planted some rubber, it seems not to have occurred to anybody that anything would ever come of this. Apparently, also, little attention was paid to occasional reports concerning the progress of this industry.

Now the situation is reversed. Almost every issue of the local papers devoted to agriculture contains an article on native rubber, and at planters' meetings it is a frequent topic for discussion.

According to almost all the writers, the natives are enjoying unheard of prosperity (for natives). Native rubber is described as being the vilest stuff imaginable, native methods such that their trees will either perish from disease or butchery, so that although there is considerable extension of plantings these are really in the

nature of replacements of older gardens that have become worthless. Furthermore, natives do not care to establish plantations at any distance from their villages. From this the comfortable conclusion is drawn that the maximum output native rubber will ever reach is just about the 50,000 tons they produced last year.

In the INDIA RUBBER WORLD of September, 1923, appeared some facts concerning native rubber in Sumatra, as gathered by Dr. Visscher, which give the impression that native methods are not all as unscientific or worthless as one would like to believe. Also the quality and appearance of their rubber in some cases was pronounced as fairly good. Dr. Visscher declared that in several districts the people were intelligent enough to be able to adopt better methods if they decided this was necessary.

On the other hand, Dr. O. de Vries, in a recent lecture on rubber and rubber preparation, in comparing native methods with European stressed the point that the dirty, moisture-laden rubber cakes that form the greater part of the native output, after being reworked in the Chinese and Japanese factories, find a ready sale and are then often sold without being sampled; furthermore, that this rubber brings only a few cents less than the carefully prepared rubber sheet from European estates. He considers that native rubber may be a serious factor in the rubber industry and should be taken into account.

Dr. de Vries declared again the necessity for uniformity in the European product and called attention to the standard models and measures which the experiment stations have set up. He called for centralization of preparation, particularly in the case of crêpe, and said that large scale experiments had demonstrated the possibility of central making up of European rubber into blanket crêpe.

Latex for Preserving Fruit

According to the *Revue de Botanique Appliquée,* Dr. P. J. S. Cramer of Java has been trying out a new method of shipping to Europe certain kinds of tropical fruit which do not keep well. This method consists of coating the fruit, picked a little before maturity, with a thin layer of latex. The latex coagulates and so forms a protective coating by which ripening and decay are retarded. A trial shipment of mangosteens, one of the most delicate and delicious of tropical fruits, was sent to France, coated with rubber and wrapped in oiled paper, and 60 per cent of the fruit arrived in perfect condition.

Rubber Exports

Figures over the first quarter of 1924 show that the total amount of rubber shipped from the Dutch colonies was 40,667 tons. Of this Java and Madura exported 10,373 tons; Atjeh, 362 tons; Banka, 251 tons; Benkoelen, 37 tons; Biliton, 12 tons; Djambi, 5,126 tons; Lampong, 279 tons; Menado, 37 tons; Riouw, 1,689 tons; Palembang, 1,979 tons; West Coast Sumatra, 271 tons; East Coast Sumatra, 12,787 tons; Western Borneo, 3,035 tons; South and Eastern Borneo, 3,740 tons; Tapanoeli, 689 tons.

Borneo Rubber Industry

We learn from the *Financial Times,* London, August 8, 1924, that rubber is the most successful product in the State of North Borneo, British North Borneo. There are 31 large rubber estates and a number of small holdings. The principal rubber companies are almost all subsidiaries of the Chartered Company, and are said to be emerging from slump conditions. The growth of the industry is illustrated by the following figures: exports of rubber in 1908—9,600 pounds; 1911—148,000 pounds; 1915—2,353,000 pounds; 1920—9,195,000 pounds, and 1923—9,494,000 pounds, valued at £561,000, or 46 per cent of the value of all exports from the country. The total area under rubber is said to be some 60,000 acres, the product of high quality obtaining very favorable prices.

The all-in cost per pound during 1923 was 8½*d.* for the eight leading companies, as compared with 1*s.* 1½*d.* in 1921.

The following remarks on rubber in British North Borneo were made by Major G. N. Stevens in a lecture at a recent meeting of the Central Perak Planters' Association:

"I saw some very indifferent rubber in Sarawak, and was informed that it was the only rubber undertaking of any size in the country, which was fortunate. In British North Borneo there are some highly competent planters giving the best of their time and ability to estate management and with the exception of one or two bright instances, it is a case of 'flogging a tired horse,' what with poor soil, exposed hillsides, labor difficulties, and transportation problems."

In Dutch Borneo he saw some good rubber, but in a most inaccessible position which made effective management difficult.

In the *Nederlandsch-Indisch Rubber-en Thee Tydschrift,* July 1, 1924, appears an article on rubber in Dutch Borneo. The writer visited the Tanah Intan estate, which is some 20 miles from Martapura. This estate belongs to the Martapura Rubber Co., London, and comprises an area of 1,900 bouws (bouw = 1.75 acres), of which 429 are productive and 371 bouws are under young rubber. Through proper organization, it has been possible to keep the costs down to the Java level. The great disadvantage here is that coffee, palm oil and other products have proved failures. As a result planters have nothing to fall back on in times of depression in the rubber industry. In addition to this, the local planter has no efficient experiment stations to turn to for advice.

Native Rubber in Borneo

The *Nederlandsch-Indisch Rubber-en Thee Tydschrift,* July 1, 1924, reprints an article on native rubber in the southeastern corner of Dutch Borneo. There, too, the natives are in a flourishing condition, thanks to the rubber industry. Methods of cultivation and preparation are similar to those obtaining in Sumatra. Most of the rubber is shipped to Singapore to be reworked, although there are now some Japanese factories at Kloea and Barabei where part of the native product is converted into crêpes of a brown-black color. The entire rubber crop for the Oeloe Soengei division is estimated to be at least 155,000 piculs, or roughly 10,000 tons, with a value of almost 5,000,000 guilders. The rubber is brought for sale to the bazaars at Kloea, Barabei and Amoentai. Kloea has the largest bazaar, where some 2,000 piculs and more are sold every Thursday. On that day numbers of people come from the neighboring parts and often over 100 taxis may be parked there, for those in the rubber business apparently no longer travel on foot.

The number of tappable and immature trees in the Oeloe Soengei districts are estimated to be as follows:

	Tappable	Immature
Rantou	70,146	27,778
Kendangan	337,427	226,242
Barabei	778,675	198,351
Amoentai	806,398	438,899
Tandjoeng	912,092	472,772
	2,904,738	1,364,642

That is altogether some 4,000,000 trees for this one section and the writer declares that since there is only profit and no loss in this business for the natives, it strongly attracts them and they are extending their plantations on every side.

FAR EASTERN NOTES

Three merchants, H. S. Mitchell, Batavia; G. J. M. Keulemans, Singapore, and J. L. H. Ferwerda, Batavia, have established the Batavia Rubber Mills Limited. The aim is to start and exploit one or more factories for working rubber and to deal in rubber. The capital is 100,000 guilders.

The N. V. Java Rubber Maatschappij has recently been formed with a capital of 1,000,000 guilders divided into 1,000 shares of 1,000 guilders each. Of these, 600 shares have already been taken. The company will acquire and exploit land in the Dutch colonies.

Recent Patents Relating to Rubber

The United States

Issued* July 15, 1924

1,501,066 Clasp for rubber apron. E. W. Rutherford, New Haven, assignor to The Shoe Hardware Co., Waterbury, both in Connecticut.

1,501,156 Flexible covering material employing rubber cement. J. A. Wilson, Elizabeth, assignor to Duratex Corporation, Newark, both in New Jersey.

1,501,360 Tire rim. F. T. Murray, Cameron, South Carolina.

1,501,361 Dust cap for tire valves. E. V. Myers, East Orange, New Jersey, assignor to A. Schrader's Son, Inc., Brooklyn, New York.

1,501,362 Dust cap. E. V. Myers, East Orange, New Jersey, assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.

1,501,381 Corset with elastic insert. E. Van Dusen, Los Angeles, California.

1,501,478 Unitary rim for pneumatic tires. B. Darrow, Huntington Park, California, assignor to The Goodyear Tire & Rubber Co., Akron, Ohio.

1,501,728 Girdle with elastic portion. L. G. Rosenbaum, New Rochelle, New York.

1,501,739 Bath mat. A. Benedek, New York, N. Y.

1,501,778 Cushion wheel. W. P. Hoopes, Buffalo, New York.

1,501,794 Vulcanized rubber sound amplifier. R. Mertz, assignor to The Miller Rubber Co., both of Akron, Ohio.

1,501,827 Soft headed mallet. C. P. Whisler, Kenmore, assignor to The Miller Rubber Co., Akron, both in Ohio.

1,501,833 Collapsible bathtub. J. S. Amsel, Brooklyn, New York.

1,501,863 Brush and holder attachment for erasers. J. P. Nielsen, Chicago, Illinois.

Issued* July 22, 1924

1,501,919 Rubber holder for cylinders. J. Peters, Huntington, New York.

1,502,036 Heel construction for footwear. E. C. Heilhecker, assignor to National India Rubber Co., both of Bristol, Rhode Island.

1,502,232 Spring holder for attaching dust caps. J. A. Bowden, Los Angeles, California, assignor to A. Schrader's Son, Inc., Brooklyn, New York.

1,502,481 Corset with elastic section. S. J. Newman and R. E. Dodge, assignors by mesne assignments to I. Newman & Sons, Inc., all of New Haven, Connecticut.

1,502,503 Catamenial appliances. J. Hollrigl, Manchester, New Hampshire.

1,502,637 Protector for pneumatic tires. S. S. Konieczki, Stevens Point, Wisconsin.

Issued* July 29, 1924

1,502,740 Dust cap for tire valves. E. V. Myers, East Orange, New Jersey, assignor to A. Schrader's Sons, Inc., Brooklyn, New York.

1,503,068 Inflating nozzle and tire gage. L. J. Sladek, Sycamore, Illinois.

1,503,397 Facing cover for wheel assemblies. Henry Wacker, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,503,425 Nursery seat with air cushion. U. R. Martin, Faber, Virginia.

1,503,453 Belt. E. G. Kimmich, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

Issued* August 5, 1924

1,503,883 Reinforcing rings for tire beads. H. Z. Cobb, New York, N. Y., assignor to Morgan & Wright, a corporation of Michigan.

1,503,976 Wheel rim and pneumatic tire cover. J. W. Bryant, assignor of 1-12 to C. W. Bryant, 1-12 to C. J. Bryant, 1-6 to M. E. Bryant, and 1-6 to W. Sheil, all of Shepparton, Victoria, Australia.

1,504,119 Tire pressure gage. O. H. Hansen, Elmhurst, New York.

Issued* August 12, 1924

1,504,407 Bather's life protector. J. R. Williams, Cleveland, Ohio.

1,504,449 Solid tire. A. Hargraves, assignor to The Firestone Tire & Rubber Co., both in Akron, Ohio.

1,504,461 Bowling ball. M. J. Whelan, Muskegon, Michigan, assignor to The Brunswick-Balke-Collender Co., Chicago, Illinois.

1,504,689 Vehicle wheel. J. E. Hale, assignor to The Goodyear Tire & Rubber Co., both in Akron, Ohio.

1,504,694 Vehicle tire. P. W. Litchfield, assignor to The Goodyear Tire & Rubber Co., both in Akron, Ohio.

1,504,745 Combined tire patch and pump. J. de Fabio and R. M. Banks, both in Bridgeport, Connecticut.

1,504,806 Cushion tire. E. J. Brandt, Watertown, Wisconsin.

1,504,884 Fishing float. D. Garst, Waterloo, Iowa.

1,504,903 Artificial foot with rubber spring cushions. J. F. Rowley, Chicago, Illinois.

1,505,038 Rubber heel. C. W. Lavers, Halifax, Nova Scotia, Canada.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that isue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

Granted July 15, 1924

241,635 Pneumatic tire. The Wire Cord Co., Akron, Ohio, assignee of D. M. Weigel, New Castle, Pennsylvania, both in U. S. A.

Granted July 29, 1924

241,782 Inflating valve and gage. W. R. Donaldson, Phoenix, Arizona.

241,810 Pneumatic tube. A. J. Ostberg, East St. Kilda, near Melbourne, Victoria, Australia.

241,832 Wringer roll. The American Wringer Co., Inc., assignee of G. R. Keltie, both of Woonsocket, Rhode Island, U. S. A.

241,881 Rubber hose collar. L. M. Quemard, Royan, France.

The United Kingdom

Published July 9, 1924

215,736 Device to prevent leakage from a tennis ball or the like. A. G. Spalding & Bros., Ltd., 317 High Holborn, London, assignees of A. T. Saunders, Akron, Ohio, U. S. A.

215,773 Mudguard with rubber sections. A. Delange, Seine-Inferieure, France.

215,846 Tire valve. W. H. McCourt, Cary street, Drummoyne, near Sydney, Australia.

215,848 Inflatable pony for water polo or other aquatic sports. J. C. H. McCaskill, 79 Marine Parade, Worthing.

215,857 Pneumatic tire cover. Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London, and W. H. Paull and F. Fellowes, both of Fort Dunlop, Erdington, Birmingham.

215,877 Galvanic battery made of plastic composition containing comminuted rubber. Canadian Battery Container Corp., Ltd., and J. M. Ahlgren, Windsor, Ontario, Canada.

215,882 Rubber latex in plimsoll manufacture. R. Russell, Yaldersgate, Beechwood, Heaton Park, Manchester, and H. Broomfield, 23 Davenport Road, Hazel Grove, Stockport.

215,912 Golf ball. Avon India Rubber Co., Ltd., and J. W. C. Ferrebe, Avonhurst, both in Melksham, Wiltshire.

215,916 Catamenial appliance. E. Harmer, 30 Dean Road, Willesden Green, London.

215,968 Rubberized fabrics. R. Russell, Lands End House, Rhodes, near Manchester, and H. Broomfield, 23 Davenport Road, Hazel Grove, Stockport.

216,028 Rubber backed protective covering for motor vehicle fuel tanks. J. Le Guiel, 6 Rue de la Pointe d'Ivry, Paris, France.

216,045 Air tube for tires. A. Whiteway, and C. Macintosh & Co., Ltd., Cambridge street, Manchester.

Published July 16, 1924

216,345 Electric vulcanizer. J. Wilkenson & Sons (Greengates), Ltd., Parkside Works, Apperley Bridge, and H. J. Brearey, Brook Hill, Baildon, both in Yorkshire.

216,416 Leather-bound rubber sole. J. Baker & Sons, Ltd., and D. P. Baker, all of 22 Cleveland Road, Wolverhampton.

216,421 Twin solid tires. J. B. Parker, 229 Martin Road, Middlesbrough, Yorkshire.

216,448 Rubber-studded horseshoe. W. H. Giles, 2 Rangemore street, Burton-on-Trent.

216,455 Crêpe rubber solette. J. B. Steadman, Portland street, Soundwell, near Bristol.

216,457 Rubber-covered pessary. E. W. Lambert, H. W. Lambert, P. M. C. Watkins, and H. P. N. Watkins, 60 Queens Road, Dalston, London.

216,466 Rubber sole. J. Mason, 82 Cornhill, London.

216,481 Piston packing employing rubber composition. Westinghouse Brake & Saxby Signal Co., Ltd., 82 York Road, King's Cross, London, assignees of C. C. Farmer, Pittsburgh, Pennsylvania, U. S. A.

Published July 23, 1924

216,627 Cushion tire. Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London, and F. Fellowes, Fort Dunlop, Erdington, Birmingham.

216,673 Swimming appliance. H. Olsson, The Paragon, Bath, Somerset.

216,711 Toy boomerang with elastic cord. A. J. Bartlett, 2 The Grange, Westbury-on-Trym, Bristol.

216,804 Draught excluder. M. G. Henry, 139 Sandgate road, Folkestone.

216,809 Skirt protector. A. M. Lassen, 106 East 19th street, New York, N. Y., U. S. A.

216,810 Reinforced molded ebonite wheel. M. Baudou and R. Baudou, Les Eglisottes, Gironde, France.

216,817 Oscillating vane pump employing rubber packing plate. Berliner Bumpenfabrik Akt., Ges. vorm M. Brandenburg, 19 Kiefholzstrasse, Berlin, and J. Kirchgesser, 11 Herfurthplatz, Neukoln, Germany.

Chemical Patents will be found on page 797, Machinery and Process Patents on pages 804-805

216,858 Inflating valve for footballs, tires, etc., P. E. Anglade, 39 Rue Paradis, Marseilles, France.

216,880 Tire protector. L. P. C. Lotte, 57 Boulevard Pereire, Paris, France.

Published July 30, 1924

216,988 Detachable rim attachment for cushion tire. Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London, and F. Fellowes, Fort Dunlop, Erdington, Birmingham.

217,026 Heat insulating slab employing rubber sheeting. J. Broadfoot & Sons, Ltd., and J. G. Robertson, Inchholm Works, Whiteinch, Glasgow.

217,027 Insulating slab employing rubber sheeting. J. Broadfoot & Sons, Ltd., and J. G. Robertson, Inchholm Works, Whiteinch, Glasgow.

217,083 Face supports. B. Jacobson, 11 Dover street, London.

217,112 Practice golf ball. W. L. Eaton, Holyoke, Hampden, Massachusetts, U. S. A.

217,158 Rubber faced doll for advertising purposes. W. Hunger, 3 Thomasgasse, Leipzig, Germany.

217,210 Personal urinal belt. L. J. Ajamian and Y. E. Ajamian, 732 Highpoint avenue, West Hoboken, New Jersey, U. S. A.

217,217 Core for use in molding or vulcanizing rubber articles. R. S. Burdette, assignor to The Goodyear Tire & Rubber Co., both in Akron, Ohio, U. S. A.

217,222 Rubber hand block for holding sheet abrasive. W. L. McKnight, assignor to Minnesota Mining & Manufacturing Co., both in St. Paul, Minnesota, U. S. A.

217,239 Inflatable colonic support. J. I. B. Cambies, Chatelguyon, Puy-de-Dome, France.

Published August 7, 1924

217,272 Perforated rubber handle grip. T. J. Fletcher, 30 Johnson street, Liverpool, and R. J. Mills, 60 Mitchell street, Rochdale.

217,347 Electric coupling with rubber sleeve. A. L. Davis, Royal Aircraft Establishment, South Farnborough, Hampshire.

217,360 Latex treated tennis ball. R. Russell, Yaldersgate, Beechwood, Heaton Park, Manchester, and H. Broomfield, 23 Davenport Road, Hazel Grove, Stockport.

217,379 Device to limit the extension of tire tubes. St. Helens Cable & Rubber Co., Ltd., and H. C. Harrison, Warrington, Lancashire.

217,392 Combined hairnet and cap. A. Burnet and A. Burnet & Co., 48 Golden Lane, Barbican, London.

217,470 Rubber diaphragm for pressure gage. J. L. Hodgson, Eggington House near Leighton Buzzard, Bedfordshire.

217,571 Resilient floor covering. A. F. Decker, 118 East 25th street, New York, N. Y., U. S. A.

New Zealand

Published July 10, 1924

50,497 Milking machine teat cup inflator. R. N. Pilkington, Hamilton.

52,098 Pneumatic tire valve. R. H. Smith and L. H. Keogh, both of 100 Marine Parade, Napier.

Germany

Design Patents Issued, With Dates of Issue

875,324 (April 3, 1924). Seamless rubber preservative. Otto Dillner, Leipzig, Neusellerhausen.

875,366 (May 8, 1924). Sanitary band of sponge rubber combined with fabric. Elsa Memel, Wildermannstrasse, 36, Dresden.

875,396 (May 15, 1924). Rupture band without back spring. Friedrich Wilhelm Simon, Elkenbachstrasse 25, Frankfurt-am-Main.

875,442 (April 30, 1924). Medical syringe for injecting opaque and semi-opaque solutions. Dr. Fritz Müller, Arnstadt-in-Thuringen, and Arthur Eichhorn, Schmiedefeld-in-Thuringen.

875,459 (May 9, 1924). Rubber nipple with reinforcement. Wilhelm Tscheuschner, Lippehnerstrasse 23, Berlin.

875,581 (May 15, 1924). Voice for rubber dolls and animals. Sachsland Gummiwarenfabrik, Bürgel-in-Thüringen.

875,691 (May 17, 1924). Tennis ball. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

875,763 (May 14, 1924). Glass mat. Haguma Hannoversche Gummiabsatz Fabrik, Hannover, Ricklingen.

875,775 (May 16, 1924). Brush with sponge rubber instead of bristles. Paul Kirsten, Grassenhain i. S.

875,787 (May 19, 1924). Bar handle. Hannoversche Gummiwerke Excelsior A.-G., Hannover-Limmer.

875,807 (February 12, 1924). Sponge rubber cushioning for artificial legs. Emil Seyfert, Baumstrasse 14, Hannover.

875,839 (May 7, 1924). Atomizer. Firma Emil Kober, Jr., Chemnitz-Altendorf.

875,907 (November 29, 1923). Rubber heel. Arthur Brebeck, Siemensstrasse 11, Kassel.

876,053 (May 14, 1924). Rubber toy figure. Uebersee Gummiwerke A.-G., Hamburg.

876,086 (May 21, 1924). Rubber toy. W. F. Thiele, Springerstrasse 9, Leipzig.

876,154 (May 9, 1924). Sanitary garment. Elfriede Forsthöfel, Reichswald-Allee 69, Düsseldorf, Rath.

876,181 (May 22, 1924). Non-skid device for pneumatic tires. Anton Lenfert, Amelshüren b. Münster, Westphalia.

876,257 (May 22, 1924). Atomizer. Dr. Göhring, Bitterfeld.

876,371 (May 20, 1924). Soft rubber container (flask) for liquids. Zieger & Wiegand A.-G., Leipzig.

876,389 (May 24, 1924). Heel protector for rubber tread patches. Max Martin, Werdau i. S.

876,441 (April 26, 1924). Rubber doll painted in colors, varnished and vulcanized. Sachsland Gummiwarenfabrik, Bürgel, Thüringen.

876,450 (May 6, 1924). Rubber doll representing figure from fairy tales. Sachsland Gummiwarenfabrik, Bürgel, Thüringen.

876,571 (April 10, 1924). Hanger for soft rubber container for fluids. Hannoversche Gummiwerke Excelsior A.-G., Hannover-Limmer.

876,632 (May 5, 1923). Knee cushion for motorcyclists. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

876,784 (May 31, 1924). Elastic solid tire. A. G., Metzeler & Co., Munich.

876,807 (March 26, 1924). Button of soft rubber. Otto Dillner, Torgauerstrasse 30, Leipzig-Neusellerhausen.

876,995 (May 15, 1924). Rubber animal. Sachsland Gummiwarenfabrik, Bürgel, Thüringen.

877,655 (June 7, 1924). Rubber ball with inserts causing protuberances when squeezed. Alfred von Ahlften, Hütten, 116 Hamburg.

877,918 (June 14, 1924). Tie of rubber. Sachsland Gummiwarenfabrik, Bürgel in Thüringen.

877,972 (May 14, 1924). Rubber mat. Wilhelm Ebmeier, Sonnenbergerstrasse 48, Wiesbaden.

878,059 (June 10, 1924). Window clamp of rubber. Sachsland Gummiwarenfabrik, Bürgel in Thüringen.

878,062 (June 13, 1924). Rubber garter. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

878,197 (May 14, 1924). Hollow body of soft rubber for dolls with voice. Firma Aug. Glöckner, Worms.

878,243 (June 18, 1924). Rubber band. C. Aufermann & Söhne, Lüdenscheid.

Patents Issued With Dates of Issue

398,842 (September 25, 1923). Rubber garters. Max Manfred v. d. Heyden, Helmstedterstrasse 17, Berlin-Wilmersdorf.

399,022 (October 31, 1922). Arm band consisting of braided rubber ring. Ajax Gummiwebwaren A.-G., Barmen, W.

399,066 (January 25, 1923). Syringe for local anesthetizing. Dr. Jean Louis Raison, Paris; represented by: Dr. P. Breitenbach, Düsseldorf.

399,203 (October 15, 1922). Saddle for motorcycle and bicycle, with soft sheet rubber cover. Schmidt's Gummiwarenfabrik Arthur Schmidt A.-G., Stade, Hannover.

399,250 (February 13, 1924). Foot mat of rubber, rubber substitute or the like. Hercules Gummiwarenfabrik Reed; Marx & Co., Hannover-Limmer.

399,343 (May 23, 1922). Cellular tire. Thomas Elliot, Strabane, Ireland; represented by: Eyck, Magdeburg.

399,395 (October 18, 1923). Atomizer. René Jean and André Lucien Brossard, Paris; represented by: Dr. R. Geissler, Berlin S. W. 11.

399,437 (August 8, 1923). Rubber sole. Marcel Karman, Budapest; represented by: R. Schmehlik and Co., Satlow, Berlin S. W. 61.

399,519 (September 8, 1923). Casing. Viktor Viel, Bucharest, Rumania; represented by: M. Mintz, Berlin S. W. 11.

399,933 (July 13, 1923). Protective armor for pneumatic tire. Mathew Kelly, London; represented by: Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, Frankfurt-am-Main, and T. R. Koehnhorn and E. Noll, Berlin S. W. 11.

400,362 (October 24, 1923). Rubber doll with joint sockets. Johannes Gotthilf Dietrich, Berlinerstrasse 145, Berlin-Tempelhof.

Austria

Patent Published May 15, 1924

A3,396-23 Solid rubber tire. Sociéta Italiana Pirelli, Milan.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted July 22, 1924, Act of February 20, 1905

186,542 The word PURITAS arranged in a semi-circle—sanitary articles for women's wear. Marshall Field & Co., Chicago, Illinois.

186,555 The word KURVPAK—ice and hot water bottles, fountain syringes, foot and bed warmers. Manley-Nicholls Co., Indianapolis, Indiana.

186,579 Representation of a wide arched doorway with crowds entering thereat and from it broken lines as of light rays extending up in fan shape, across which are the words CELEBRITY SHOES, By FRED A. EYRE, in distinctive arrangement and in letters simulating display lights; on either side of the scroll bearing the proprietor's name are the words HAUTE and QUALITE, respectively—shoes and slippers made of leather, rubber, fabric, or combinations of these. Fred E. Eyre & Co., Inc., Brooklyn, New York.

186,599 Within an octagonal border a massive T across which is printed the word TYER and below this the inscription ESTAB. 1856; within the annular space provided by the double-ruled border are the firm name and address—cigar tips and tobacco pouches of rubber or rubber compounds. Tyer Rubber Co., Andover, Massachusetts.

186,600 The word GO-SUM, describing an inverted semi-circle—golf balls. The Crawford, MacGregor and Canby Co., Dayton, Ohio.

186,641 Within a rectanglar border with overlapping corners the words: SACKS STANDWEAR SHOES, arranged one word under the other so that the first S serves for all three words—shoes of leather, rubber, fabric or combinations of these. Jacob Sacks, doing business as Jac. Sacks, Jersey City, New Jersey.

186,713 On a circular label, having space for number and dimension, the words: HAMPSHIRE SUPER LISLE WARRANTED 12 YARDS; and beneath these words and within an irregularly shaped border line the words: ELASTIC WEB—elastic webs. Geo. S. Colton Elastic Web Co., Easthampton, Massachusetts.

186,775 RADIO—raincoats. Cambridge Rubber Co., Cambridge, Massachusetts.

186,816 Within an octagonal border a massive T across which is printed the word TYER and under this the inscription ESTAB. 1856; within the annular space provided by the double ruled border is the firm name and address—druggists' and surgical rubber goods. Tyer Rubber Co., Andover, Massachusetts.

186,848 RED MAN—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,870 SNUGINS—cover fasteners to hold bedclothing in place. W. R. Chappell, doing business as Universal Cover Fastener Co., New York, N. Y.

186,947 TEN/STRIKE, the initial letters being large and fancy and the remaining letters small and plain; a diagonal line separates the words—shoes of leather, rubber and fabric, and combinations of these. Hurley Shoe Co., Rockland, Massachusetts.

186,949 Within an octagonal border a massive T across which is printed the word TYER and under this the inscription ESTAB. 1856; within the annular space provided by the double ruled border is the firm name and address—bathing shoes and bathing caps. Tyer Rubber Co., Andover, Massachusetts.

Granted July 22, 1924, Act of March 19, 1920, Section 1 (b)

187,001 THE WALTON BRAND, the middle word being in large script and the other two words being small and arranged one above and the other below the name—suspenders, garters, neckwear, arm bands; leather, rubber and fabric belts for personal wear. Southern Suspender Co., Edwards, Mississippi.

187,036 The word STANDARD, slanting diagonally upward and underscored by the last stroke of the final letter—rubber heels. T. A. Farrell, doing business as Standard Rubber Co., Carlstadt, New Jersey.

187,046 BETTY BARR—shoes of leather, rubber, fabric, or combinations thereof. The May Department Stores Co., St. Louis, Missouri.

Granted July 29, 1924, Act of February 20, 1905

187,147 Within an octagonal border a massive T across which is printed the word TYER—rubber bands. Tyer Rubber Co., Andover, Massachusetts.

187,195 BUCK, the first two letters slanting up and the last two slanting down—windshield cleaners of the squeegee type. Trico Products Corporation, Buffalo, New York.

Granted August 5, 1924, Act of February 20, 1905

187,459 Distinctive arrangement somewhat suggesting the letters TN, and with a zig-zag line as of an electrical flash through the N—electrical conduits and fittings, insulating brackets, tubing, rubber covered wire and cables. National Metal Moulding Co., Pittsburgh, Pennsylvania.

187,561 BANNER—hard rubber combs—American Hard Rubber Co., Hempstead and New York, N. Y.

Granted August 5, Act of March 19, 1920, Section 1 (b)

187,670 EVER-WEAR—rubberized and waterproof sheeting and crib sheets. Richard Falter, doing business as Richard Falter Co., New York, N. Y.

Granted August 12, 1924, Act of February 20, 1905

187,694 EXTENSOR—flaps for automobile rims. North Eastern Rubber Co., Elizabeth, New Jersey.

187,762 THEBESTOS—brake linings. The Republic Rubber Co., Youngstown, Ohio.

187,768 CHIEF'S PRIDE, in block letters and with a block border—hose of rubber reinforced with fabric. The B. F. Goodrich Co., New York, N. Y.

187,782 PARAMOUNT—piece goods made wholly or in part of cloth and rubber. J. C. Haartz Co., Boston, Massachusetts.

187,840 THUNDERBOLT—tire patches. F. J. Hagerling, St. Louis, Missouri.

187,854 DIMPLE—pneumatic tubes. Wolverine Climax Co., Detroit, Michigan.

187,865 CHALLENGER—automobile tires of rubber cord and fabric. The New England Mills Co., doing business as Challenger Rubber Manufacturing Co., Chicago, Illinois.

187,894 A label bearing the words: TIRES ON CREDIT, at the center of a circle; across the diameter of which and extending beyond it on a black background are the words: PAY AS YOU RIDE, and within the annular space provided by the double ruled border of the circle the firm name and address—automobile tires made chiefly of rubber. T. O. Probey Co., Inc., Washington, D. C.

187,935 VENUS—sanitary articles for women's wear. The Venus Corporation, New York, N. Y.

187,953 WHALITE—machinery packing comprising rubber and fiber. West American Rubber Co., Los Angeles, California.

187,972 NATIONAL—golf balls. Wright & Ditson, Boston, Massachusetts.

187,987 ARONETTE, the word slanting diagonally upward—rubberized raincoats, top coats and overcoats. J. I. Aronson, doing business as Aronson Coat Co., Boston, Massachusetts.

187,996 DOUGHNUT—pneumatic and non-pneumatic tires, and inner tubes. H. V. Whitlock, Elizabeth, New Jersey.

The Dominion of Canada

Registered

35,916 SNUGS—rubber footwear. Gutta Percha & Rubber, Ltd., Toronto, Ontario.

35,917 LASTICS—rubber footwear. Gutta Percha & Rubber, Ltd., Toronto, Ontario.

35,942 GASPAC—inner tubes. Ajax Rubber Co., Inc., Millbrook, New York.

The United Kingdom

Published July 9, 1924

447,813 RADION—electric insulating substances. American Hard Rubber Co., 11 Mercer street, New York City, N. Y., U. S. A.

448,287 AIRONA—bag stoppers made principally of rubber, for drain, gas, and other pipes. Burn Brothers (London) Limited, 3 Blackfriars Road, London, S. E. 1, and 121 Hanover street, Edinburgh.

448,706 TRUCO—goods of rubber or gutta percha exclusively in Class 40. Traun Rubber Co., Ltd., 57 Rathmines Road, Dublin, Ireland.

448,707 TRUCO—combs for the hair; tobacco pipes, holders and tubes for cigars and cigarettes. Traun Rubber Co., Ltd., 57 Rathmines Road, Dublin, Ireland.

Published July 16, 1924

445,135 HOTSPUR—rubber soles and heels. Rubber Industries, Ltd., Downham Mills, Chestnut Road, Tottenham, London, N. 17.

448,284 EDLON—tubes for tires for cycles, motor cycles, and motor cars, and covers for same, all being exclusively in Class 40. E. Edwards & Co., 1 and 11 Great Eastern street, and 5 Fairchild Place, London, E. C. 2.

449,329 PLASTITE—goods of rubber and gutta percha exclusively in Class 40.

Published July 23, 1924

449,210 VELOMETER—golf accessories, including balls. Cyril Joseph Moore Martin, 7 Avenue Road, Herne Bay, Kent.

Published July 30, 1924

445,284 RADIOCO—all goods in Class 27. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

445,285 RADIOCO—all goods in Class 28 except handkerchiefs and similar articles. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

445,286 RADIOCO—all goods in Class 31. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

445,288 RADIOCO—all goods in Class 34. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

445,289 RADIOCO—all goods in Class 35. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

445,290 RADIOCO—all goods in Class 36. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

445,291 RADIOCO—all goods in Class 37. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

445,293 RADIOCO—all goods in Class 39, except driers for printing inks or pens and similar articles. Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

445,294 RADIOCO—waterproofing compounds for coating textile and leather goods included in Class 50. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

447,167 A figure comprising four circles with double ruled straight line connection—machine belting included in Class 40. The Leyland & Birmingham Rubber Co., Ltd., Golden Hill Works, Golden Hill Lane, Leyland, near Preston, Lancashire.

448,761 COBRA—hair curlers of rubber. Ingram & Everest, Hazeldene, Draycott Road, Wanstead, London, E. 11.

448,949 RADIOCO—all goods in Class 40. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

448,950 RADIOCO—all goods in Class 49. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

448,951 RADIOCO—tarpaulins, tents, rick covers, rope, twine, tubular hose, yarns and piece goods made from cellulose fiber, wooden boxes, artificial flowers and sponge bags of textile materials. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

449,000 UNDERWRITER—canvas hose in Class 50. Lewis & Tylor, Ltd., Gripoly Mills, Sloper Road, Cardiff.

449,171 Representation of a horse and rider, the man wearing an officer's plumed hat and a raincoat with cape; diagonal lines to indicate rain—articles of clothing. J. Mandleberg & Co., Ltd., Albion Waterproofing Works, Cobden street, Pendleton, Manchester.

449,697 SURFLIT—golf balls. The Leyland & Birmingham Rubber Co., Ltd., Golden Hill Works, Golden Hill Lane, Leyland, near Preston, Lancashire.

Published August 6, 1924

448,908 VARIOLASTIC—corsets, brassieres, bust supporters, suspenders, garters, etc. Kops Bros., Inc., 120 East 16th street, New York, N. Y., U. S. A.

448,934 LEVINA—waterproof and rainproof garments. H. H. Levy, trading as Harry H. Levy & Co., 27 Minshull street, Manchester.

449,407 COPOMANA—cups for collecting rubber latex on rubber plantations. Jacob Vellenzer, 24ii, Gartnergasse, Mainz-on-Rhine, Germany.

449,568 QUADRAT—rubber boots and shoes. Baltic India Rubber Co., Quadrat, 34 Baznicas iela, Riga, Latvia.

449,352 ROVER—packings and jointing included in Class 50. James Walker & Co., Ltd., Lion Works, Garford street, Poplar, London, E. 14.

449,795 HIPRESS—articles of clothing. The B. F. Goodrich Co., 1780 Broadway, New York, N. Y.

TIRE AND RIM ASSOCIATION REPORT OF RIMS INSPECTED AND APPROVED DURING JULY, 1924

Size	Number	Per Cent
Clincher Rims		
26 x 3	3,999	0.4
28 x 3	484	0.0
30 x 3	33,382	2.1
30 x 3½	697,492	54.3
31 x 4	none	...
Straightside Rims		
25 x 3½	219	0.0
28 x 3½	107,658	7.3
29 x 3½	none	...
30 x 3½	73,479	6.9
32 x 3½	3,362	0.3
28 x 4	63,605	4.0
29 x 4	39,739	3.1
30 x 4	10,736	0.8
31 x 4	none	...
32 x 4	65,740	5.1
33 x 4	6,129	0.6
34 x 4	none	...
29 x 4½	14,738	1.1
30 x 4½	62,820	4.2
31 x 4½	9,958	0.7
32 x 4½	77,872	5.8
34 x 4½	7,833	0.6
36 x 4½	1,077	0.1
30 x 5	4,561	0.3
31 x 5	15.072	1.5
33 x 6	3,046	0.3
Truck Rims		
30 x 5	496	0.0
34 x 5	6,030	0.4
32 x 6	1,900	0.2
36 x 6	2,056	0.2
34 x 7	1,085	0.1
38 x 7	103	0.0
36 x 8	5	0.0
40 x 8	1,492	0.1
Totals	1,316,168	100.0

Designs

The United States

Issued* July 15, 1924

65,184 Anklet. Term 14 years. V. Ginsberg, assignor to I. B. Kleinert Rubber Co., both of New York, N. Y.

65,189 Tire. Term 7 years. E. G. Hulse, assignor to Kelly-Springfield Tire Co., both of Cumberland, Maryland.

65,190 Tire. Term 7 years. E. G. Hulse, assignor to Kelly-Springfield Tire Co., both of Cumberland, Maryland.

65,199 Tire. Term 7 years. E. D. Newman, New York, N. Y.

Issued* July 22, 1924

65,218 Tire. Term 3½ years. W. P. Braender, Montclair, New Jersey.

65,231 Tire. Term 14 years. L. A. Brown, Alto, Michigan.

65,189 65,190 65,199 65,218 65,221 65,297 65,299 65,300 65,302 65,318 65,348 65,373

65,297 Tire. Term 14 years. P. H. Ober, assignor to Mansfield Tire & Rubber Co., Mansfield, Ohio.

65,299 Tire. Term 14 years. B. H. Pratt, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

65,300 Tire. Term 14 years. H. D. Reichard, Akron, Ohio.

65,302 Tire. Term 14 years. H. Rudginsky, Boston, Massachusetts.

Issued* July 29, 1924

65,348 Non-skid tire. Term 3½ years. H. McCreary, Indiana, Pennsylvania.

Issued* August 5, 1924

65,373 Tire. Term 7 years. L. P. Holloway, assignor to American Rubber & Tire Co., both of Akron, Ohio.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

Registered

6,264 Pressure gage consisting of a substantially cylindrical casing provided at one end with a foot portion having the form of a segment of a sphere. A. Schrader's Son, Inc., New York, N. Y., U. S. A.

6,266 Golf ball. Game Balls Co., Ltd., Windmill Road, Brentford, Middlesex, England.

6,268 Tire, consisting of a central circumferential groove in the tread portion of the tire, flanked by grooves extending laterally therefrom, in staggered relation and in open communication with the tread surface; the laterally extending grooves decrease in depth from the point of mergence with the central circumferential groove to the point where the groove terminates at the shoulder of the tire. The Goodyear Tire & Rubber Co. of Canada, Ltd., Toronto, Ontario.

6,269 Tire consisting of a central circumferential ridge flanked by a circumferential groove at each side thereof and by a series of diamond tread buttons positioned at the sides of the tread and connected thereto by means of a bridge extending from the side of the tread buttons; the triangular portion of the tread extends between adjacent diamond tread buttons, and each of the diamond tread buttons is tapered from its longitudinal central line outwardly to the outermost point, thereby reducing the thickness of the tread button to a comparatively thin portion at the outer point thereof. The Goodyear Tire & Rubber Co. of Canada, Ltd., Toronto, Ontario.

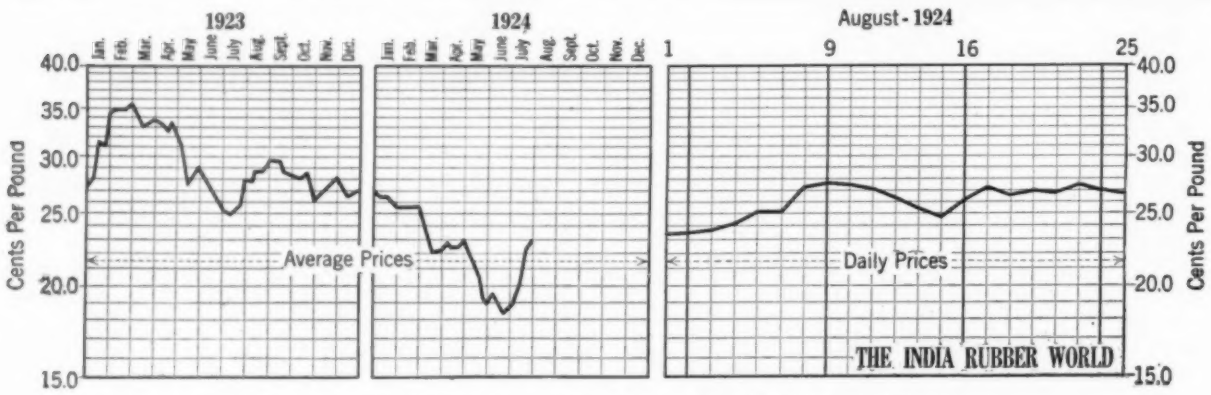
6,270 Golf ball. The Goodyear Tire & Rubber Co. of Canada, Ltd., Toronto, Ontario.

6,274 Tire. Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec.

UNITED STATES IMPORTS OF AUTOMOBILE TIRES

During the first six months of the present year there has been a steady increase in American imports of automobile tires from various foreign countries, with France far in the lead. It will be noted from the accompanying tabulation that the March and June figures respectively represent high records for volume and value.

	France		Great Britain		Canada	
	Number	Value	Number	Value	Number	Value
January	18,001	$85,765	76	$1,702	64	$798
February	12,831	80,747	7	43	22	323
March	45,018	213,616	74	217	46	507
April	26,002	163,710	24	60	74	1,293
May	27,068	187,143	14	248	170	2,269
June	35,720	226,861	3	104	3	35



Ratio Graph of New York Average Sales Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

THE CRUDE rubber market met with an encouraging change for the better in the advance of about seven cents on ribs since the first of July. The cause was revival in the American tire industry and increased limitation of crude rubber exports. These are expected to maintain the advance for the duration of the present increase in tire manufacturing.

During the past month there was renewed interest and buying activity on the part of manufacturers whose need for replenishing became unexpectedly pressing. On July 28 the market was firm at about 24½ cents for spot ribs, due to buying on the part of dealers and uncertainty concerning an increase of restriction on exports for the third quarter under the Stevenson plan.

Official announcement was made on August 1, of five per cent additional restriction reducing the exportable allowance of British controlled plantation rubber to 55 per cent of standard production. Previous to this manufacturers were not much interested and had not adjusted their ideas to the increasing prices. The following week higher London cables, advance in the sterling exchange rate, and large purchases for western factories caused a very firm and excited market, and traders worked overtime to keep pace. London and eastern markets continued high and firm while the New York market became calmer as the week closed.

Buyers generally were holding back with the result that prices dropped suddenly. Although there were many sellers, buyers continued their waiting policy. Higher London cables and the firm exchange rate soon caused an upward turn, which was stimulated by a prompt buying movement on the part of consuming interest, rendering spot rubber very scarce.

It is thought that acceptance by France of the Dawes plan will cause sterling exchange to advance still further and increase the firmness of the market.

Manufacturers' interest was maintained for nearly all positions the third week of the month, and the market for spot ribs held very firm at 26¾ to 27¾ cents. Spot latex crêpe has for some time past commanded a cent a pound premium over ribs.

Parás were firm and steady in sympathy with plantations, while stocks and arrivals were small. Balatas were rather neglected, but firm and in short supply.

Importations of all grades during July, 1924, were 19,969 tons, compared with 18,609 tons one year ago. Plantation arrivals for July, 1924, were 18,390 tons, compared with 17,459 tons one year ago. Total importations of all plantation grades for seven months ended July 31 were 165,201 tons, compared with 196,406 tons for the corresponding period of 1923. Total importations of all grades of rubber for the seven months ended July 31, were 174,785 tons, compared with 208,648½ tons for the corresponding period of last year.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

PLANTATION. August 1. Spot first latex crêpe, 24½-24⅝ cents; Aug.-Sept., 24⅝-24¾ cents; Oct.-Dec., 24⅜-24⅞ cents; Jan.-Mar., 25-25¼ cents.

August 25. Spot first latex crêpe, 27-27¼ cents; Aug.-Sept., 27-27¼ cents; Oct.-Dec., 27⅛-27⅜ cents; Jan.-Mar., 27⅜-27½ cents.

August 1. Spot ribbed smoked sheets, 23½-23⅝ cents; Aug.-Sept., 23⅝-23¾ cents; Oct.-Dec., 23⅞-24⅛ cents; Jan.-Mar., 24¼-24⅜ cents.

August 25. Spot ribbed smoked sheets, 26¼ cents; Aug.-Sept., 26¼ cents; Oct.-Dec., 26⅛-26¼ cents; Jan.-Mar., 26½-26⅝ cents.

August 1. Spot No. 2 amber crêpe, 26-26¼ cents; Aug.-Sept., 26¼-26⅜ cents; Oct.-Dec., 26⅜-26½ cents; Jan.-Mar., 26½-26⅝ cents.

August 25. Spot No. 2 amber crêpe, 25¾ cents; Aug.-Sept., 25¾ cents; Oct.-Dec., 25⅞-26 cents; Jan.-Mar., 26-26¼ cents.

August 1. Spot No. 1 rolled brown crêpe, 22-22¼ cents; Aug.-Sept., 22¼-22⅜ cents; Oct.-Dec., 22⅝-22⅞ cents; Jan.-Mar., 23-23⅛ cents.

August 25. Spot No. 1 rolled brown crêpe, 24-24½ cents; Aug.-Sept., 24¼-24⅜ cents; Oct.-Dec., 24⅜-24½ cents; Jan.-Mar., 24½-25 cents.

SOUTH AMERICAN PARAS AND CAUCHO. August 1. Spot, upriver fine, 23 cents; islands fine, 21¼ cents; upriver coarse, 14¾ cents; islands coarse, 13½ cents; Cametá, 14 cents; caucho ball, 15 cents.

August 25. Spot, upriver fine, 29¾-30 cents; islands fine, 22-23 cents; upriver coarse, 23 cents; Cametá, 17¾ cents; Caucho ball, 16¾-21 cents.

New York Average Spot Rubber Prices

PRICES IN CENTS PER POUND

PLANTATIONS	July, 1924																						Aug., 1924	
	7	8	9	10	11	12	14	15	16	17	18	19	21	22	23	24	25	26	28	29	30	31	1	2
Sheet																								
Ribbed smoked	19⅛	19⅝	20¼	19⅞	20¾	21½	21	21¾	22⅛	21⅝	21⅛	21⅝	21¼	22⅛	22¼	22⅛	22⅛	22¾	23½	23⅛	23⅛	23¼	23⅜	23⅝
Crêpe																								
First latex	20¼	20⅝	21⅛	20⅞	21⅜	22⅛	22	22½	22⅞	22⅝	22⅛	22⅝	22⅞	23¼	23	22⅞	23¼	23⅝	24¼	23⅞	24	24¼	24¼	24⅜
Off latex	19⅞	20⅛	20⅛	20¼	21	21¾	21½	21⅞	22⅛	21⅞	22	22⅛	22¼	22⅞	22½	22⅛	22¾	23⅛	23¾	23¼	23½	23¾	23¾	23⅞
No. 1 blanket	18¾	19¼	19¾	19⅞	20¾	....	....	....	....	21⅜	....	....	....	....	....	....	....	22⅜	....	....	....	....	....	....
No. 2 blanket	18½	18⅞	19¼	19⅜	19¾	20¼	20⅜	21	21½	21¼	21	21½	21¼	22	21¾	21⅜	21¾	22½	22⅝	22½	22⅜	22½	22½	22¼
No. 3 blanket	18⅜	18½	19¼	19	19⅜	20⅜	20	20⅝	21⅛	20¼	20⅞	20⅜	21	21¼	21⅜	21¼	21½	21¾	22¼	22⅛	22⅛	22⅜	22⅜	22½
Thin, clean brown	18½	18½	19⅜	19⅜	19⅞	20¼	20⅜	20¼	21	20⅞	20⅞	21	21¼	21⅜	21½	21½	21½	21⅞	22½	22¼	22¼	22½	22½	22¼
Specky brown	18⅛	18	19	18⅞	19⅜	19⅜	19¼	20¼	20⅝	20½	20⅛	20¼	20⅞	21⅛	21¼	20¼	21⅛	21⅛	21¾	22⅛	21⅞	22	21⅞	22
Rolled brown	17	17⅛	17¾	17⅜	18¼	18⅞	18⅞	19	19⅜	19⅛	19⅛	19¼	19¼	20	20	19⅞	20¼	20⅜	21¼	21	21¼	21⅛	21¼	21⅛

New York Quotations

Following are the New York spot rubber quotations, for one year, one month ago, and August 25, the current date:

Plantation Hevea

LATEX	August 25, 1923	July 25, 1924	August 25, 1924
Rubber latex (Hevea)..*gal.*	$1.25@1.30	$1.25 @	$1.30 @
CREPE			
First latex	.29¼@	.23 @	.27 @.27¼
Off latex	.29½@	.23 @	.27 @
Amber No. 2	.28½@	.22 @	.26 @.26¼
Amber No. 3	.28 @	.21½@	.25¾@.26
Brown, clean, thin	.28 @	.21½@.21¾	.26 @
Brown, specky	.27¾@	.21¼@	.25½@
Brown, roll	.27½@	.20¼@	.24 @.24½
Sole crêpe	@	.45 @	.45 @.46
SHEET			
Smoked, ribbed	.29¾@	.24¼@.22⅜	.26¼@.26½
Smoked, plain	@	@	@
Unsmoked	@	@	@

East Indian

PONTIANAK

Banjermassin	.07½@	.06¾@	.06½@.07⅜
Palembang	.08 @	.07 @	.08 @
Pressed block	.12½@	.11½@.12¼	.12¼@.12½
Sarawak	.07 @	.06½@	.05½@.07

South American

PARAS

Upriver, fine	.28¾@	.22½@.22⅜	.29¾@.30
Upriver, fine	*.36¾@	*.29 @	*.37 @
Upriver, medium	†.27 @	.19 @	.24 @
Upriver, coarse	.23¾@	.13⅞@.14	.23 @
Upriver, coarse	*.34½@	*.25 @	*.27½@.28
Islands, fine	†.27 @	.20 @	.22 @.23
Islands, medium	@	.18 @	.22 @
Islands, coarse	.23¼@	.12 @	.15 @
Cametá	.15 @	.13 @	.17¾@
Acre Bolivian, fine	.29 @	.22¼@	.29 @
Acre Bolivian, fine	*.37 @	* @	*.38 @
Beni Bolivian	.29½@	.22¼@	.29½@
Madeira, fine	†.30 @	.22½@	.30 @
Peruvian, fine	†.26½@	.19½@	.26 @
Tapajos, fine	.27½@	.19 @	.25½@
CAUCHO			
Upper caucho ball	.24 @.24½	.14 @	.21 @
Upper caucho ball	*.34½@	*.25 @	*.27½@.28
Lower caucho ball	.22½@	.13 @	.16¾@

Maniçobas

Ceará negro heads	@	.19 @	†.14 @
Ceará scrap	@	.08 @	†.08 @
Maniçoba 30% guaranty	@	.17 @	.18 @
Mangabeira, thin sheet	@	.22 @	.21 @

Centrals

Central scrap	.17 @.17½	.13¼@	.18 @.20
Central wet sheet	.10 @.12	@	.12 @.14
Corinto scrap	.17 @.17½	.13¼@	.18 @.20
Esmeralda sausage	.17 @.17½	.13¼@	.18 @.20
Guayule washed and dried	.27 @	.22 @	.24 @

Africans

Benguela, No. 1, 28½%..	@	@	@
Benguela, No. 2, 32½%..	.15 @	†.11 @	.14 @
Congo prime, black upper	@	†.16 @.17	.18 @
Congo prime, red upper	@	†.15 @.16	.19 @
Kassai, black	.22 @.23	†.16 @.17	.18 @
Kassai, red	.20 @.21	†.15 @.16	.19 @

Gutta Percha

Gutta Siak	@	.16 @.16¼	.16 @.17
Gutta Soh	.23¼@	.27 @	.20 @.26
Red Macassar	3.00 @	2.90 @3.00	3.00 @3.90

Balata

Block, Ciudad Bolivar	.71 @	.63 @.65	.65 @.67
Colombia	.60 @.61	.50 @.54	.55 @.57
Panama	.60 @.61	.49 @.53	.55 @.57
Surinam, sheet	.80 @	.80 @.82	.77 @.78
amber	.85 @.86	.80 @.82	.80 @

Chicle

Honduras	.63 @	‡.58 @.68	‡.58 @.68
Yucatan, fine	.63 @	‡.58 @.68	‡.58 @.68

*Washed and dried crêpe. Shipment from Brazil.
†Nominal.
‡Duty paid.

London

Following the annual bank holidays the first of the month, spot rubber opened firm at 13¼ pence after announcement by the Stevenson Committee reducing the exportable allowance of rubber produced on British controlled plantations from 60 to 55 per cent, or from 16,750 tons a month to 15,362 tons monthly. The announcement is said to have caused some disappointment in the trade among those who were expecting 10 per cent reduction. Early in the month pressing buying demands and the strength of the New York market during the London holidays gave spot rubber a notable advance.

The price progressed to 14 pence, the highest of the present year, on the ninth of the month. This rapid increase was stimulated by urgent buying against few offerings and frequent high American bidding. A week later spot had receded to 12¾ pence on the absence of American buying, but promptly regained much of the lost ground in the following week, closing steady with some American interest in September-October and October-November positions.

Reported London stocks were 1,678 tons between July 22 and August 26. The weekly stocks were as follows: July 29, 51,950 tons; August 5, 51,829 tons; August 12, 51,409 tons; August 19, 50,335 tons; August 26, 49,828 tons.

Singapore

Better feeling resulted from the reduction in the export percentage for the third quarter. August in the Singapore market opened with spot ribs at 12⅛ pence, raised by the influence of New York bids. The market trend followed closely those of London and New York and became active and firm with excellent business; succeeded about the middle of the month by less interest. In the interval the price of ex go-down rubber rose to 13½ pence highest and on the twenty-fifth was dull at 13⅛ pence.

Comparative Low and High New York Spot Rubber Prices

	August					
PLANTATIONS	1924*		1923		1922	
First latex crêpe	$0.25¼@	$0.28¼	$0.27⅛@	$0.29¾	$0.13⅜@	$0.14¾
Smoked sheet, ribbed	.24⅛@	.27⅜	.27⅛@	.29¾	.13⅜@	.14¾
PARAS						
Upriver, fine	.23¾@	.28½	.27 @	.28⅝	.18¼@	.19½
Upriver, coarse	.15 @	.17½	.23 @	.24¼	.13 @	.14
Islands, fine	.21½@	.25	.25 @	.26¼	.17¼@	.17¾
Islands, coarse	.13¾@	.16	@		.08½@	.09½
Cametá	.13¼@	.16	.14 @	.15	.08¾@	.09½

*Figured to August 25, 1924.

Reclaimed Rubber

The increased activity in rubber goods manufacturing has been markedly evident in the better demand for reclaims. Prices are firmer and advancing, especially for the higher qualities. Reclaimers are anticipating active fall business calling for increased production of standard grades such as enter automobile topping, insulated wire, tire treads, footwear, heels, and mechanicals.

In view of the upward trend of crude rubber prices manufacturers will do well not to delay too long in making commitments covering their reclaimed rubber needs while present price levels hold. These represent high values, both actual and relative, in quality of pastic and tensile properties.

New York Quotations

August 25, 1924

Auto Tire

Black	*lb.*	$0.08½@$0.08⅝
Black, washed	*lb.*	.09⅞@ .10
Dark gray	*lb.*	.09½@ .09¾
Light gray	*lb.*	.10½@ .11
White	*lb.*	.12 @ .12½

Shoe

Unwashed	*lb.*	.08¼@ .09
Washed	*lb.*	.12 @ .12¼

Reclaimed Rubber—*Continued*

Tube

No. 1 floating	.13¼@	.13½
No. 2 compounded	.09¾@	.10¼

Uncured Tire Friction

No. 1 floating	.22½@	.23½
No. 2 compounded	.16 @	.18

Miscellaneous

High grade, red	.13¼@	.13½
High tensile, black	.14 @	.14½
Mechanical blends	.05 @	.06
Truck tire	.07¾@	.08

The Market for Rubber Scrap

Rubber scrap prices showed better tone with the opening of the past month. Steadily increasing interest on the part of reclaimers who desire to restore their stocks of scrap in view of the prospects of good business in reclaims has stiffened dealers' prices on all scrap grades. Scrap dealers are paying higher prices to collectors for boots and shoes. They are not inclined to accept consumers' current bids but are holding off for better prices as general conditions improve.

BOOTS AND SHOES. Demand from reclaimers has been fair with prices advancing and becoming firmer. Sales have been made in fair volume to New Jersey, Connecticut, and Ohio points.

INNER TUBES. Inner tubes are moving better for consumption. Prices have become more actively higher with the increase of demand. In fact, the upward movement is restraining sales to some extent.

MIXED TIRES. The demand for mixed tires a months ago has since shown more activity at better prices which are liable to further advance in the near future.

MECHANICAL GRADES. A mild interest in mechanical scrap rubber is noted with improved output of molded rubber goods.

Consumers' Quotations for Carload Lots Delivered

August 25, 1924

Boots and Shoes

Boots and shoes, black	$0.02¼@	$0.02⅜
Trimmed arctics	.01¾@	.01⅞
Untrimmed arctics	.01⅛@	.01¼

Hard Rubber

Battery jars, black compound	.01 @	—
No. 1 scrap	.05 @	.06

Inner Tubes

No. 1 floating	.04 @	.04¼
No. 2 compounded	.02¾@	.03
Red	.02⅛@	.02⅞

Mechanicals

Black scrap, mixed	.00½@	.00¾
Heels	.00½@	—
Horse-shoe pads	.00¾@	—
Hose, air brake	15.00 @	16.00
regular	10.00 @	12.00
Red, scrap, mixed	.01¼@	.01½
White, scrap, mixed	.01¼@	.01½

Tires

PNEUMATIC

Auto peelings	11.00 @	13.00
Bicycle	7.00 @	8.00
Standard white autos, with beads	20.00 @	22.00
Mixed autos, with beads	12.00 @	13.00
Stripped, unguaranteed, with beads	10.00 @	10.50

SOLID

Carriage	20.00 @	22.00
Irony	10.00 @	15.00
Truck, clean	22.00 @	25.00

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	June, 1923 Pounds	June, 1923 Value	June, 1924 Pounds	June, 1924 Value
UNMANUFACTURED—*free*				
Crude rubber				
From France	155,982	$39,388	44,463	$10,178
Netherlands	651,114	186,687	22,400	6,046
Portugal	.....	.....	.....	.....
United Kingdom	9,558,712	2,859,368	7,080,647	1,588,646
Canada	.....	.....	2,850	587
Central America	13,875	2,130	3,460	541
Mexico	.....	.....	.....	.....
Brazil	2,247,317	532,044	2,248,195	326,632
Peru	107,518	53,029	1,683	487
Other So. America	285,399	92,462	26,703	4,006
British E. Indies	53,977,913	16,696,366	33,052,053	7,474,492
Dutch E. Indies	11,790,128	3,393,797	7,627,081	1,839,377
Other countries	400,753	86,666	22,588	3,255
Totals	79,188,711	$23,941,937	50,132,123	$11,254,247
Balata	80,483	58,222	45,933	15,115
Jelutong or Pontianak	913,737	79,894	1,845,982	180,916
Gutta percha	461,450	81,130	436,147	53,109
Guayule	.....	.....	296,400	52,052
Rubber scrap	1,256,462	185,828	409,361	30,869
Totals	81,900,843	$24,347,011	53,165,946	$11,586,308
Chicle *dutiable*	256,236	$120,483	255,881	$121,299
MANUFACTURED—*dutiable*				
Rubber belting	23,432	$15,904	58,894	$35,197
Other manufactures of substitutes for rubber	.....	84,008	.....	294,868
Totals	23,432	$99,912	58,894	$330,065

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	545,601	$64,985	525,886	$38,189
Scrap and old	1,344,394	64,423	1,291,904	51,932
Footwear				
Boots *pairs*	27,833	78,263	33,656	86,047
Shoes *pairs*	50,871	44,026	78,526	74,534
Canvas shoes with rubber soles *pairs*	336,133	257,727	363,106	287,100
Druggists' rubber sundries	64,683	64,583	.....	.....
Water bottles and fountain syringes *number*	.....	.....	16,505	12,134
Other druggists' rubber sundries	.....	.....	55,507	65,739
Bathing caps	.....	.....	20,635	37,033
Hard rubber goods				
Battery jars and accessories	11,553	3,731	89,055	17,736
Other electrical supplies	15,777	9,202	8,664	4,726
Other hard rubber goods	65,557	45,949	38,525	48,408
Tires				
Pneumatic casings				
For automobiles *number*	144,580	1,610,259	106,637	1,339,200
Others *number*	8,566	25,527	4,174	22,306
Pneumatic tubes				
For automobiles *number*	109,481	188,531	106,051	202,893
Others *number*	5,763	4,958	4,359	3,932
Solid tires				
For automobiles and motor trucks *number*	7,911	186,474	7,694	192,212
Others	81,793	20,838	134,962	31,142
Tire repair materials	80,455	30,764	132,657	50,004
Belting	271,546	161,906	298,573	180,960
Hose	412,713	170,193	424,376	164,209
Packing	166,808	73,220	141,191	63,937
Soles and heels	150,308	52,774	229,887	76,265
Thread	105,648	106,135	175,940	172,568
Other rubber manufactures	543,412	290,919	344,788	177,590
Totals	.....	$3,555,387	.....	$3,400,796

Exports of Foreign Merchandise

UNMANUFACTURED				
Crude rubber	1,747,561	$539,956	2,210,795	$472,059
Balata	6,367	3,703	43,921	27,006
Jelutong or Pontianak	.....	.....	.....	.....
Gutta percha and rubber substitutes and scrap	.....	.....	2,073	198
Total	1,753,868	$543,659	2,256,789	$499,263
Chicle	.....	.....	.....	.....
MANUFACTURED				
Gutta percha and india rubber	378	$297	869	$772
Totals	378	$297	869	$772

Details of exports of domestic merchandise by countries during June, 1924, appears on pages 840-843 of this issue.

The Market for Chemicals and Compounding Ingredients

New York

REACTION from the slump in rubber goods manufacturing is now the rule. Essentially every branch of the rubber industry is reported actively purchasing supplies to replace reduced stocks, and all are favorably inclined toward commitments for future needs. Business in compounding ingredients has gained distinctly in activity and volume in the past month and delivery dates on contracts have been advanced by buyers. Orders for basic ingredients are being placed for double the usual quantities and prompt deliveries are urged.

ACCELERATORS. Manufacturers' requirements for organic accelerators have revived and business has been active in all the usual organic accelerators. Ultra accelerators continue to gain in favor although aniline, thiocarbanilid and hexamethylene tetramine are still in good demand.

BENZOL. Production of benzol is now at 35 to 50 per cent of normal due to reduction in manufacture of coke.

CARBON BLACK. Stocks of carbon black in producers' hands are ample to supply the increasing orders without delays. Ordinary grades of carbon black are about 1 cent a pound lower in price than they were a month ago. Special grades are not reduced.

CLAY. Rubber manufacturers are restocking on compounding clay and other inert fillers, such as whiting. White clay is rapidly mounting in favor. The demand for whiting is also increasing.

LITHARGE. Litharge has advanced ½ cent a pound on kegs and casks during the past month.

SOLVENT NAPHTHA. Water white continues in small supply and active demand. Prices have been well maintained.

ZINC OXIDE. Zinc oxide remains unchanged with demand active.

New York Quotations

August 25, 1924

Accelerators, Inorganic

Lead, carbonate	*lb.*	$0.10	@
Lead, red	*lb.*	.11	@
sublimed blue	*lb.*	.09½	@
sublimed white	*lb.*	.09½	@
Lime, flour	*lb.*		@
R. M.	*lb.*	.01¼	@
R. M. hydrated (carload)	*ton*	15.00	@
superfine	*lb.*		@
Litharge	*lb.*	.10½	@ .11
imported	*lb.*		@
Magnesia, carbonate	*lb.*	.07¼	@ .08½
calcined, light (bbls.)	*lb.*	.24	@ .25
calcined, ex. light (bbls.)	*lb.*	.40	@
calcined, md. light (bbls.)	*lb.*	.15	@
calcined, heavy (bbls.)	*lb.*	.04½	@ .05½
Orange mineral A.A.A.	*lb.*	.14	@
Rubber lead	*lb.*	.10	@

Accelerators, Organic

A-7	*lb.*	.75	@ .85
A-19	*lb.*	.85	@ .95
Accelemal	*lb.*		@
Accelerene (f. o. b. English port)	*lb.*		@
Aldehyde ammonia powder	*lb.*	.95	@
Aniline (f. o. b. factory)	*lb.*	.16	@ .17½
sulphate	*lb.*	.33	@
Cryline	*lb.*	.60	@
Diphenylguanidine	*lb.*	1.10	@ 1.20
Ethylidene aniline	*lb.*	.70	@ .75
Excellerex	*lb.*	.40	@ .45
Formaldehyde aniline	*lb.*	.42½	@
Hexamethylene tetramine	*lb.*	.85	@
Lead oleate (bbls.)	*lb.*	.15	@
Methylene aniline	*lb.*	.36	@ .40
No. 999	*lb.*	.15½	@
Paraldehyde	*lb.*	.17	@ .19
Paraphenylene diamine	*lb.*	1.40	@ 1.50
Quinodine	*lb.*	.40	@
Super-sulphur, No. 1	*lb.*	.50	@ .60
No. 2	*lb.*	.25	@ .35
Tuads (Tetramethyl thiuram-disulphide)	*lb.*	6.00	@
Thiocarbanilide	*lb.*	.25	@ .32
Triphenylguanidine	*lb.*	.75	@

Acids

Acetic 28% (bbls.)	*cwt.*	3.38	@
glacial (carboys)	*lb.*	.16	@
Creaylic (95% straw color)	*gal.*	.63	@ .68
(95 dark)	*gal.*	.61	@ .66
Sulphuric, 66 degrees	*lb.*	.02	@

*Nominal.

Alkalies

Caustic soda	*cwt.*	3.10	@ 4.50
flake, 76% (factory)	*cwt.*	3.60	@ 4.31
solid, 76% (factory)	*cwt.*	3.20	@ 3.91

Colors

BLACK

Aerfloted arrow	*lb.*	.07	@ .10
Bone	*lb.*	.05½	@ .07½
Carbon black	*lb.*	.07	@ .11
compressed	*lb.*	.07½	@ .12
Drop	*lb.*	.06	@ .10
Ivory black	*lb.*	.12	@ .45
Lampblack	*lb.*		@
Micronex	*lb.*	.08	@ .12
A. & W. Nonfli	*lb.*	.40	@
Shawinigan	*lb.*	.15	@ .16
Thermatomic Carbon (factory)	*lb.*	.04	@

BLUE

Cobalt	*lb.*	.21	@ .26
Gritless blue	*lb.*	2.00	@ 4.00
Prussian	*lb.*	.40	@ .50
Ultramarine	*lb.*	.10	@ .35

BROWN

Iron oxide	*lb.*	.04½	@ .05½
Sienna, Italian	*lb.*	.05½	@ .07
Umber, Turkey	*lb.*		@

GREEN

Chrome, light	*lb.*	$0.29½	@ $0.31
medium	*lb.*	.32	@ .35
dark	*lb.*	.35	@ .38
commercial	*lb.*	.10	@ .10½
tile	*lb.*	.13	@ .15
Gritless green	*lb.*	2.00	@ 3.00
Oxide of chromium	*lb.*	.36	@ .51
T. K.	*lb.*		@

RED

Antimony, golden	*lb.*	.18	@ .20
golden T. K.	*lb.*		@
golden R.M.P. No. 7	*lb.*	.20	@
golden, 15/17% G. E.	*lb.*	.20	@ .22
golden, 15/17% F. S.	*lb.*	.18	@
golden, No. 1	*lb.*	.30	@
golden, No. 2	*lb.*	.20	@
Antimony, crimson	*lb.*	.45	@ .50
crimson T. K.	*lb.*		@
crimson, 15/17% G. E.	*lb.*	.40	@ .45
crimson, 15/17% F. S.	*lb.*	.39	@
crimson, R.M.P. No. 3	*lb.*	.48	@
crimson F.	*lb.*	.45	@
7-A	*lb.*	.35	@
Z-2	*lb.*	.18	@
Golden pentasulphide T. K.	*lb.*		@
Vermilion, 5% F. S.	*lb.*	.65	@
Vermilion 15/17% F.S.	*lb.*	.50	@
Arsenic-sulphide, red	*lb.*		@
Gritless red (four shades)	*lb.*	1.50	@ 3.00
purple	*lb.*	2.00	@ 3.00
English India Red	*lb.*	.10	@ .11
Iron oxide	*lb.*	.09	@ .14
domestic	*lb.*	.02½	@ .12
English	*lb.*	.11	@ .13
Indian	*lb.*	.08	@ .12
pure bright	*lb.*	.11	@ .14
reduced	*lb.*	.07	@ .10
Spanish	*lb.*	.02½	@ .04
Venetian	*lb.*	.02	@ .06
Oximony	*lb.*	.13½	@
Pará toner	*lb.*	.95	@ 1.00
Toluidine toner	*lb.*	1.95	@ 2.25
Vermilion, English	*lb.*	1.35	@

WHITE

Akcolith	*lb.*		@
Albalith	*lb.*	.06¾	@ .06⅞
Aluminum bronze	*lb.*	.55	@ 1.25
Lithopone	*lb.*	.06	@
Sterling	*lb.*	.06⅛	@ .06⅝
Azo	*lb.*		@
Imported	*lb.*	.05¾	@ .06⅛
Red seal, imported	*lb.*	.07	@
T. O. Pigment	*lb.*	.15	@ .17
Zinc oxide:			
AAA, lead free	*lb.*	.08	@ .08¼
Azo (factory):			
ZZZ (lead free)	*lb.*	.08	@ .08¼
ZZ (—5% leaded)	*lb.*	.07⅛	@ .07⅜
Z (8.10% leaded)	*lb.*	.07⅛	@ .07⅜
French process, Florence brand			
Green seal	*lb.*	.11	@ .11¼
Red seal	*lb.*	.10	@ .10¼
U. S. P.	*lb.*	.16	@ .18
White seal	*lb.*	.12	@ .12¼
Horse Head brands			
Selected	*lb.*	.08½	@ .08¾
Special	*lb.*	.08½	@ .08¾
XX red	*lb.*	.08	@ .08¼
Leaded brands			
Lehigh	*lb.*	.07⅛	@ .07⅜
Standard	*lb.*	.07⅛	@ .07⅜
Sterling	*lb.*	.07⅛	@ .07⅜
Superior	*lb.*	.07⅛	@ .07⅜
Palmerton process			
Kadox, black	*lb.*	.10⅞	@ .11⅛
blue	*lb.*	.09⅞	@ .10⅛
red	*lb.*	.08⅞	@ .09⅛
Snow white	*lb.*	.12	@

YELLOW

Arsenic	*lb.*		@
Chrome	*lb*	.18	@ .21
Gritless yellow	*lb.*	2.50	@ 4.00
India rubber	*lb.*	.75	@
Ochre, domestic	*lb.*	.01½	@ .02½
imported	*lb.*	.03¼	@ .04¼

Chemical Market—*Continued*

New York Quotations

August 25, 1924

Compounding Ingredients

Aluminum flake (carloads)	*ton*	21.85	@
(sacks)	*ton*	24.50	@
Ammonia carbonate	*lb.*	.14½	@ .15
Asbestine	*ton*		@
Aluminum silicate	*ton*	25.00	@
Barium, carbonate	*ton*		@
dust	*lb.*	.05	@ .06
Barytes, imported	*ton*	28.00	@35.00
pure white	*ton*		@
O.C.X., off color	*ton*		@
uniform floated	*ton*		@
water ground and floated	*ton*	23.00	@25.00
Basofor	*lb.*	.04¼	@
Blanc fixe	*lb.*	.04½	@
Carrara filler (factory)	*lb.*	.01¾	@
Chalk, precip. extra light	*lb.*	.04¼	@ .05
heavy (f.o.b. factory)	*lb.*	.03¼	@ .04
Clay, Dixie	*ton*	22.00	@35.00
Blue ribbon (carloads)	*ton*	14.00	@
Blue Ridge	*ton*	12.00	@26.00
Catalpo	*ton*	38.00	@40.00
China	*lb.*	.01½	@
China, L. H. B.	*ton*		@
English, L. H. B.	*lb.*		@
Langley	*ton*		@
Cotton flock, black	*lb.*		@
light-colored	*lb.*		@
white	*lb.*		@
Cotton linters clean mill-run	*lb.*	.05½	@
Fossil flour (powdered)	*ton*		@
(bolted)	*ton*		@
Glue, high grade	*lb.*	.22	@ .30
medium	*lb.*	.20	@ .26
low grade	*lb.*	.15	@ .18
Graphite, flake	*lb.*	.06½	@ .12
Infusorial earth (pow'd)	*ton*		@
(bolted)	*ton*		@
Lime (bolted)	*lb.*		@
Mica, amber	*lb.*	.05	@
powdered	*lb.*		@
white	*lb.*		@
Pumice stone, powdered	*lb.*	.03	@ .05
Rotten st., powd. (bbls.)	*lb.*	.02½	@ .04½
Slate flour (factory)	*ton*		@
Soap bark, cut	*lb.*	.09¼	@ .09¾
Soapstone	*ton*		@
Sodium bicarbonate (bbls.)	*lb.*		@
Starch, powd. corn (bags)	*cwt.*	3.97	@ 4.07
(bbls.)	*cwt.*	4.24	@ 4.34
Talc, soapstone	*ton*	15.00	@22.00
Terra blanche	*ton*	23.00	@27.00
Whiting, domestic No. 33	*ton*	12.50	@
chalk	*ton*		@
commercial	*cwt.*	.90	@ 1.00
English, imported	*lb.*	.01¼	@
English, cliffstone	*cwt.*	1.40	1.75

* Nominal.

Mineral Rubber

Genasco (factory)	*ton*	50.00	@52.00
Gilsonite	*ton*		@
Granulated M. R.	*ton*	40.00	@60.00
Hydrocarbon, hard	*ton*	31.00	@50.00
Hydrocarbon, soft	*ton*	30.00	@50.00
Liquid rubber	*lb.*	.10	@
Ohmlac Kapak, K-R	*ton*	30.00	@60.00
K-4	*ton*	175.00	@
320/340 M. P. hydrocarbon	*ton*	45.00	@50.00
300/310 M. P. hydrocarbon	*ton*	40.00	@45.00
Pioneer, M. R., solid (fac.)	*ton*	42.00	@44.00
M. R. granular	*ton*	52.00	@54.00
Robertson, M. R., solid	*ton*	35.00	@75.00
M. R. granular (factory)	*ton*	42.00	@80.00
Rubrax (factory)	*ton*	60.00	@
Synpro, gran. M. R. (fac.)	*ton*		@

Resins and Pitches

Tar, pine, retort	*bbl.*	11.50	@12.00
kiln	*bbl.*	11.50	@13.00
Pitch, Burgundy	*lb.*	.05	@
coal tar	*ton*	25.00	@
Fluxol hardwood	*lb.*	.03	@ .04
pine tar	*bbl.*	6.00	@
ponto	*lb.*	.05	@
Rosin, K (bbl.) 280 lbs.		6.55	@
strained (bbl.) 280 lbs.		6.55	@
Shellac, fine orange	*lb.*		@
substitute	*gal.*		@

Softeners

Avoilas compound	*lb.*		@
Castor, No. 1, U. S. P.	*lb.*	.17½	@
No. 3, U. S. P.	*lb.*	.17	@
Corn, crude (bbls.)	*lb.*	.13	@
Cotton, Summer yellow	*lb.*	.15	@
Cycline	*gal.*	.35	@ .38
Glycerine	*lb.*	.18½	@ .19
Linseed, raw	*gal.*	1.10	@
Palm lagos	*lb.*	.10	@
oil clarified	*lb.*		@
Palm, niger	*lb.*	.09½	@
Parra M. R. flux	*lb.*		@
Peanut, crude	*lb.*	.14	@
refined	*lb.*	.16	@
Petrolatum, standard	*lb.*	.06	@ .08
Petrolatum, sticky	*lb.*	.08	@ .10
Pine, steam distilled	*gal.*	.68	@
Rapeseed, refined	*gal.*	.90	@
blown	*gal.*	1.08	@
Rosin	*gal.*	.50	@
Synpro	*gal.*		@
Soya bean	*lb.*		@
Tar	*gal.*	.26	@ .28
Woburn	*lb.*	.05	@

Solvents

Acetone (98.99% drums [6.62 lbs. per gal.])	*lb.*		@
Benzol (90% drums [7.21 lbs. per gal.])	*gal.*		@
pure (drums)	*lb.*		@
Carbon bisulphide (dms. [10.81 lbs. per gal.])	*lb.*	.07	@ .08
tetrachloride (drums, [13.28 lbs. per gal.])	*lb.*	.07	@ .08
Gasoline			
No. 303			
Tankcars	*gal.*	.20	@
Drums, carlots	*gal.*	.23	@
Drums, less carlots	*gal.*	.26	@
Motor gasoline (steel bbls.)	*gal.*	.19	@
Naphtha, V. M. & P.	*gal.*		@
solvent (drums extra)	*gal.*		@
68° Bé., 122°, 324°	*gal.*	.16½	@
70° Bé., 114°, 314°	*gal.*	.17½	@
71° Bé., 112°, 304°	*gal.*	.18½	@
Cymene (factory)	*gal.*		@
Toluol, pure (7.21 lbs. per gal.)	*gal.*		@
Turpentine, spirits	*gal.*	.96	@
wood, steam distilled	*gal.*	.86	@

Substitutes

Black	*lb.*	.09	@ .14
Brown	*lb.*	.10	@ .15
White	*lb.*	.09	@ .15
Brown factice	*lb.*	.08½	@ .16
White factice	*lb.*	.09½	@ .15¼

Vulcanizing Ingredients

Black hypo	*lb.*		@
13% F. S.	*lb.*		@
Sulphur chloride	*lb.*	.04	@ .05
Sulphur, Bergenport brand, 100% pure (bbls.)	*cwt.*	2.60	@ 2.90
(bags)	*cwt.*	2.35	@ 2.65
Sulphur, Bklyn bd. (bbls.)	*cwt.*	2.60	@ 3.15
superfine com. (bgs.)	*cwt.*	2.00	@ 2.50
(bbls.)	*cwt.*	2.40	@ 2.90
Rubber makers	*cwt.*	3.10	@ 3.25

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com.	*lb.*	.43	@ .45
ceresine, white	*lb.*	.10	@ .11
carnauba	*lb.*	.19	@ .20
montan	*lb.*	.06	@ .06½
ozokerite, black	*lb.*	.26	@ .27
green	*lb.*	.28	@ .29

Paraffin

122/124 white crude scale	*lb.*	.05½	@
124/126 white crude scale	*lb.*	.05¾	@
120/122 fully refined	*lb.*	.06	@
125/127 fully refined	*lb.*	.06	@

CYCLINE OIL

This new softener for rubber mixings consists of a blend of mineral and vegetable oils. Selection of the proper oils and their proportion is the result of long and careful experimentation. The proportions of cycline used in compounding varies from 0.5 to 2 per cent on the rubber in the mixing. It facilitates processing of stocks, does not retard the cure and helps to prevent checking of cured goods.

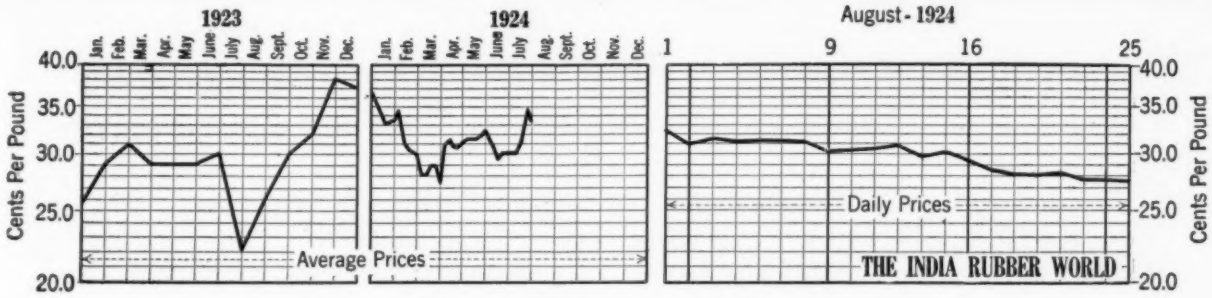
SOUTH BEND HARD CLAY

Rubber compounding clays come very generally from deposits in Georgia and other far southern states. There has recently been marketed a new clay from New Jersey. Practical tests of this clay indicate its technical value as regards reinforcing effect and resistance to abrasive wear. In fineness over 99 per cent of the material passes through a 200-mesh screen. Analysis shows the clay content to be 78.69 per cent, specific gravity 260.

DU PONT NO. 18 ACCELERATOR

A new accelerator known as Du Pont accelerator No. 18 is certain to prove of much interest to rubber manufacturers because of its characteristics and practical value. Its chemical designation is di ortho tolylguanidine. It is probably the most powerful commercial accelerator not in the so-called "ultra" class. Among its many claims to merit are the following: Stocks containing it are not self-curing and may be stored for long periods without deterioration. Being a dense powder the accelerator does not dust away during mixing, nor soften the stock especially. It is not hygroscopic, is non-poisonous and odorless. It is widely used in white or lightly colored stocks because it does not produce discoloration or bloom to the surface.

While not absolutely necessary to use zinc oxide with this accelerator, a small amount considerably increases its effectiveness and the range of cure.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. Official and unofficial crop condition reports agree in setting the crop condition at the middle of August at 67.4 per cent, equivalent to a total of 13,000,000 bales. Up to August 1 the boll weevil damage was very small. There is a possibility of increased weevil damage later this month, after which will follow the tropical storm period and still later the period of frosts. These possibilities for damage cannot be estimated but, in general, the cotton trade is more optimistic over the crop outlook at present than it has been over any crop since 1920.

In conformity with the prospects for a crop of 13,000,000 bales the prices for spot cotton have been generally downward, with a few moderate upward fluctuations at intervals, mostly about the middle of the month. The New York spot price for spot Middling Upland August 1 was 32.40 cents and on August 25 was 27.60 cents. Some experienced cotton men consider that a 13,000,000 bale crop could be sold at prices averaging between 23 and 25 cents a pound.

EGYPTIAN COTTON. Uppers on spot are gone until such time as they can be replenished by the new crop. News of the latter is very favorable. The first picking in Upper Egypt promises to be satisfactory and that in quality the receipts are about the same as last year. It will take another fortnight for the first Sakel to arrive.

Quotations for November-December deliveries f. o. b. Boston were as follows: August 2, Medium Sakelaridis, 43 cents, Medium Uppers, 35 cents; August 9, Medium Sakelaridis, 45⅝ cents, Medium Uppers, 36⅛ cents; August 16, Medium Sakelaridis, 45 7-16 cents, Medium Uppers, 35⅝ cents; August 23, Medium Sakelaridis, 44 11-16 cents, Medium Uppers, 34 3-16 cents.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The market has gained in activity since last month. Prices are still easy, and will so continue pending raw cotton decline.

SHEETINGS. There has been a fair amount of buying during the past two weeks, mostly for immediate shipment. Buyers need goods but are still operating cautiously. The cotton crop promises to be larger than expected which, no doubt, will bring lower prices. The present drop in cotton has upset sheeting business temporarily.

TIRE FABRICS. Greater inquiry developed about the middle of August. Fabric buying has been better than in a long time. The immediate business mostly involved spot goods and September delivery, for which there is some demand for filling in purposes. Around 55 cents was asked for spots of average good grade carded peeler cord. Mills insist that on the base indicated they cannot make a fair profit. Quite suddenly the hand to mouth policy of the tire industry has been abandoned and long term contracts substituted for the former policy. Egyptians are coming in with the balloon tire while cheap materials were probably never more in demand by the smaller tire companies.

New York Quotations

August 25, 1924

Drills

38-inch 2.00-yard	yard	.21½@
40-inch 3.47-yard		.12½@
52-inch 1.90-yard		.23¼@
60-inch 1.52-yard		.29 @

Duck

CARRIAGE CLOTH

38-inch 2.00-yard	yard	.23 @
40-inch 1.47-yard		.31¼@
72-inch 16.66-ounce		.54 @
72-inch 17.21-ounce		.56 @

MECHANICAL

Hose	pound	.45 @
Belting		.44 @

TENNIS

52-inch 1.35 yard	yard	.38 @

Hollands

DEAD FINISH

Standard, 36-inch	yard	.19½@
41-inch		.23½@

FLAT FINISH

Imperial, 36-inch		.15½@
40-inch		.17½@

RED SEAL

36-inch		.18 @
40-inch		.19 @
50-inch		.30 @

GOLD SEAL

40-inch		.29 @

Osnaburgs

40-inch 2.35-yard	yard	.19⅛@
40-inch 2.48-yard		.18⅛@
40-inch 3.00-yard		.15 @
37-inch 2.42-yard		.18⅝@

Raincoat Fabrics

COTTON

Bombazine 64 x 60	yard	$0.13 @
Bombazine 60 x 48		.12 @
Plaids 60 x 48		.12¼@
Plaids 56 x 44		.13¾@
Surface prints 60 x 48		.13 @
Surface prints 64 x 60		.13¼@

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.17¼@
48 x 48, 2.85-yard		.15 @ .15¼
64 x 68, 3.15-yard		.15¼@
56 x 60, 3.60-yard		.12¾@
48 x 44, 3.75-yard		.11½@

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	09¼@
40 x 40, 6.15-yard		07⅝@

Tire Fabrics

SQUARE WOVEN 17¼-ounce

Egyptian, karded	pound	.58 @ .60
Peeler, karded		.52 @ .54

CORD 23/5/3

Egyptian, combed	pound	.68 @ .70
Egyptian, karded		.63 @ .65
Peeler, combed		@
Peeler, karded		.55 @ .56

CORD 13/3/3

Peeler, karded	pound	.53 @ .55

LENO BREAKER

8-oz. Peeler, karded	pound	.53 @ .55
10-oz. Peeler, karded		.53 @ .55

CHAFER

8.25-oz. Peeler, karded	pound	.48 @ .50
9.5-oz. Peeler, karded		.53 @ .55
12-oz. Peeler, karded		.53 @ .55
14-oz. Peeler, karded		.53 @ .55

The Cotton Outlook

American Crop Prospect Promising

Good progress is being made by the American cotton crop in most parts of the belt. The crop estimate of the Department of Agriculture as of August 1 was 67.4 per cent of normal, as compared with 57.0 per cent on the same date last year, following which a total crop of 10,128,478 bales was obtained. On this basis a crop of 12,351,000 500-pound bales is predicted for this year, a gain of over 2,000,000 bales and the largest since 1920. This represents an increase of 207,000 bales over the estimate of July 25, but is, of course, subject to developments during the remainder of the season, especially the duration of the drought following excessive rains in some of the older cotton states.

Because of the drought the boll weevil damage in most areas is negligible. More damage has been done by grasshoppers. Heavily increased use of fertilizer in all the cotton growing states this year, but especially in the Atlantic coast states, has been of material benefit to the crop. As the crop is a week or ten days late, ginnings prior to August 1 totaled 29,925 running bales, counting round as half bales, this year against 64,381 bales prior to August 1 last year.

Market uncertainty, wire price fluctuations, have resulted from the surprises of the crop report and the annual review of Secretary Hester of the New Orleans Cotton Exchange. The outstanding facts in the Hester report were his estimate of a larger carryover than had been looked for and a much smaller consumption of American cotton by the world. The carryover, however, was still 254,000 bales short of that of the previous season; that is to say, 2,319,000 bales, against 2,573,000. Had the consumption approached what traders counted on not long ago there would have been no carryover. Hence the predominating factor in last season's statistics was the small world consumption of 11,242,000 bales. The foreign demand seems likely to be greatly increased this season, however, due to the plans for huge foreign loans.

In the cotton goods market the raw cotton prospect is delaying contract purchasing somewhat. Some easing in prices is noted here and there, but sentiment continues generally strong in most centers. Adjustment of cloth to a proper ratio on raw cotton has made no progress and curtailment is looked to eventually to put goods on a profit basis.

American Cotton Standards Adopted by the World

The principal cotton using countries of the world, Great Britain, France, Italy, Spain, Germany and Holland, on August 1 put into effect, after slight alterations, the official standards prepared by the United States Department of Agriculture under act of Congress and which have been used in this country in interstate and foreign commerce for the past year. These standards will hereafter form the basis of all international dealings in cotton in which standards are employed. This action culminated the efforts of department officials covering a period of seventeen years.

A numerical system of designation is provided and practical forms will be issued in nine grades for white cotton, eleven grades for colored cotton, five for yellow tinges, three for stained and three for blue-stained cotton. The agreement between the countries party to it provides for arbitration through the Department of Agriculture on all disputes as to grades shipped in interstate and foreign commerce.

Because of the replacement of a mismatched box among Liverpool's set of standards by the United States Department of Agriculture, the Liverpool Cotton Association has served notice of withdrawal, effective August 1, 1925, from the agreement which makes the universal cotton standards international. While the Liverpool association is technically within its rights, other foreign bodies, including the Manchester Cotton Association, side with the United States, considering the action of the Department of Agriculture fair and for the benefit of the trade.

Until a basis of trading is reached the Liverpool Cotton Exchange has announced discontinuance of trading in contracts for future delivery of American cotton after July, 1925. Cotton men hope for an early accord following trade conferences in Washington and London.

Former American-Egyptian Standards Restored

Official standards for American Egyptian cotton in use prior to August 1, 1923, will on August 1, 1925, replace those now in effect. The change was ordered by Secretary of Agriculture Wallace in response to requests from producers of this variety of cotton in Arizona and later from shippers and spinners. The proposal was confirmed by a vote of more than two-thirds of the holders of the present standards. The latter must remain in force until August 1, 1925, as the Cotton Standards Act requires public notice of any change not less than a year in advance.

The Department also announced that no changes in the standards for upland cotton have been ordered this summer, but noted the minor revisions of the white standards for upland cotton in the grades Good Middling, Strict Middling, Middling and Strict Low Middling which were made at the time of the adoption of the universal standards.

Proposed New York Contract Changes

The Federal Trade Commission in response to a Senate resolution has recommended that some form of southern delivery on New York cotton contracts be adopted; that cotton contracts be confined to three grades, and that a reduction in the size of the contract delivery of 100 bales be given consideration; also that cotton puts and calls be abolished by a prohibitive tax.

The commission recommends that only a few southern delivery points be selected, confined to Atlantic and Gulf ports; that delivery in section and certification should be under rigid government supervision and that deliveries should be made only from warehouses licensed under the Federal Warehouse Act, also that the tender of cotton on futures at New York be no longer permitted.

To establish accurate spot quotations the commission recommended uniform procedure for determining quotations and differences. It suggested the possibility of taking a weighted average of sales differences instead of a simple average in the settlement of future contracts. It advised against abolishing the New York futures market on the ground that this city has important advantages and is the financial and trade center of the world.

Many who have studied the report believe that certain of its recommendations, such as a reduction in the present contract delivery of 100 bales, can hardly fail to perpetuate the highly speculative character of the New York futures contract. It is also asserted, for example, that the proposed restriction to three contiguous grades makes available little more actual cotton than is normally certified for tender in New York.

Conference Called to Standardize Cotton Duck

The Cotton Duck Association has asked the Division of Simplified Practice, Department of Commerce, to call together a conference of manufacturers, distributers and users on September 17 to consider a simplification of their product.

A survey of the number of pounds of the various numbers of duck made during the past four years discloses the fact that nearly 86 per cent of the material woven in that period was in the numbers 4, 6, 8, 10 and 12.

Previous listing of widths and weights had contained 432 different fabrics, in 23 widths. In a new list compiled by a committee of the association extensive curtailments were made, and 252 fabrics were included, of which 76 were considered as standard. The 76 "standard" fabrics, excluding the 22-inch width, it is declared, will cover over 85 per cent of the normal production, omitting "harvester duck," which is considered as a specialty.

Based on the survey, it is suggested to limit the proposed "standard" weights in the width groups as follows:

22-inch, nine weights;	26-inch, four weights;
28-inch, two weights;	30-inch, five weights;
32-inch, four weights;	36-inch, five weights;
38-inch, four weights;	40-inch, three weights;
42-inch, five weights;	44-inch, four weights;
48-inch, five weights;	50-inch, three weights;
54-inch, four weights;	60-inch, five weights;
66-inch, four weights;	72-inch, five weights;
84-inch, five weights;	96-inch, four weights;
108-inch, two weights;	120-inch, three weights.

The 132 and 144-inch widths are not included in the suggested "standards."

Metal Market Review

New York

There has been fair activity in most of the markets, while during the middle of August the heavier buying of metals by domestic and foreign consumers gave a particularly strong tone to copper, lead and zinc prices, quotations equaling the highest points of the year. The steel ingot output continues to show a slow but steady increase, while during the last part of the month the entire industry was probably close to 55 per cent of normal production as compared with 40 or 45 per cent in July.

ALUMINUM. Prices remain quiet, and there is a considerable export trade in this metal. It is said that Norwegian shipments of aluminum to the United States this year are double the quantity sent last year, and that more than one-half of the former country's output is being shipped to the United States.

ANTIMONY. During the last half of August there was a decided increase in prices. Although only moderate quantities were obtainable, China reported an active demand for August-September-October shipment.

COPPER. According to estimates made by trade authorities, the visible supply of copper metal has been reduced by approximately 100,000 tons during the first half of 1924, due to the increased demand in the United States for this metal for manufacturing purposes. Production for the first seven months of the current year is said to have reached 1,252,000,000 pounds, a new high record for the industry. It is also stated that the United States consumed 84 per cent more copper in 1923 than it did in 1913, while European consumption had been curtailed 38 per cent during the corresponding period. At present Europe is taking fairly large amounts of this metal.

LEAD. Most of the current demand is for August shipment, but there is not much such material available. The leading refiner still quotes 8 cents a pound, New York.

NICKEL. Shot and ingot nickel are quoted unchanged at 27 to 32 cents a pound, with electrolytic nickel held at 32 cents by the leading producers.

STEEL. There are continued reports of improvement in the steel industry, "the business barometer of the United States." According to *The Iron Age*, "The course of the steel trade still indicates a measurable increase from week to week in output of rolled products. Expectations of further improvement at the mills, and they are general, are based rather upon a rebound from the inadequate replacement buying of June and July than on any new development in important consuming lines." The total output of ingots in July has been estimated by the American Iron and Steel Institute at 1,869,416 gross tons, as compared with 2,056,466 tons in June, 3,628,261 tons in May, 3,333,535 tons in April and 4,187,942 tons in March.

TIN. There has been less interest on the part of consumers of late, and transactions have not been large. The world's visible supply of tin as of July 31 amounted to 20,161 tons, which compares with 20,094 tons a month earlier and with 20,019 tons a year ago.

ZINC. The United States is said to produce something like half the world output of both lead and zinc, with the production of both metals slowly increasing, but with the demand keeping pace with the output. According to the American Zinc Institute, the stocks on hand July 31 totaled 52,705 tons.

Basic Metals

AUGUST 23, 1924

Aluminum, virgin, 98@99 per cent	$27.00	@	$28.00
Antimony, pound	.10½	@	.10¾
Copper—Lake, spot, pound	.13¾	@	.13⅞
Electrolytic, spot	.13⅝	@	.13¾
Casting refinery	.13½	@	
Lead, spot, New York, pound	8.00	@	8.25
Lead, spot, East St. Louis	8.00	@	8.12½
Nickel, ingot, pound	.29	@	.32
Tin, spot	.52½	@	
Zinc, spot, New York	6.60	@	6.62½
Zinc, spot, East St. Louis	6.25	@	6.27½

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSE

	Cents per pound		
Bright basic	4.25	@	4.50
Annealed soft	4.50	@	4.75
Galvanized annealed	5.15	@	5.40
Coppered basic	5.15	@	5.40
Tinned soft Bessemer	6.15	@	6.40

*Regular extras for lighter gage.

Copper Wire

		F. O. B. Factory	
Bare copper wire, lb.	*.16	@	
No. 6 B. & S. gage, lb.	*.16	@	
No. 8 B. & S. gage, lb.	*.16	@	
No. 14 B. & S. gage, lb.	*.17	@	

* Base price.

RUBBER-COVERED WIRE SPECIFICATIONS

There have been in recent years continued difficulties confronting the rubber-covered wire industry in the matter of polarity identification. Misunderstandings as to braid coverings have especially affected the manufacturers of armored cable, who use rubber-covered wire in the fabrication of their products.

The final result of this series of circumstances led to the adoption of a new item in the standard for armored cables and cords, recently accepted by the Industry Conference for that material, and which reads as follows:

"Twin and twisted pair wires, No. 8 and smaller, shall have the braid of one conductor finished to show a white or natural gray color, the braid of the other conductor being finished to show either a red or black color. Three conductor cables, No. 8 and smaller, shall have the braids of the conductors finished to show white, red, and black colors respectively."

It is thought that this change, which becomes effective on January 1, 1925, will end once and for all the trouble and confusion on this particular point.—*Laboratories' Data.*

AMERICAN EXPORTS OF TIRE REPAIR MATERIALS HAVE STEADILY increased in value during the first five months of the present year, the totals being as follows: January, $23,144; February, $34,208; March, $37,600; April, $41,858; and May, $45,768.

Exports of India Rubber Manufactures from the

	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth Value	Waterproofed Clothing Value
EUROPE													
Austria	.....	.....	.....	.....	36	$56	12,014	$17,417	.....	.....	.....	$2,022	.....
Belgium	$100	$1,693	$1,279	$1,172	468	1,627	.....	.....	.....	.....	.....	.....	.....
Bulgaria	.....	.....	.....	.....	25	65	.....	.....	.....	.....	.....	.....	.....
Czechoslovakia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denmark	1,418	7	925	.....	.....	.....	.....	.....	3,594	$4,265	.....	.....	.....
Finland	77	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
France	5,872	661	626	25,041	3	18	.....	.....	.....	.....	$90	1,188	$1,952
Germany	.....	.....	.....	.....	.....	.....	1,039	966	6	12	50	.....	.....
Greece	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	136	.....
Iceland and Faroe Islands	.....	.....	.....	.....	72	272	128	121	.....	.....	.....	.....	.....
Italy	241	.....	.....	11,981	11	42	.....	.....	.....	.....	185	.....	.....
Latvia	2,498	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Malta, Gozo, and Cyprus Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Netherlands	168	688	63	.....	194	590	654	1,676	3,193	4,329	625	503	.....
Norway	112	165	104	.....	.....	.....	.....	.....	.....	.....	1,044	709	47
Portugal	.....	528	.....	.....	.....	.....	.....	.....	.....	.....	38	386	.....
Spain	.....	.....	50	8,493	.....	.....	.....	.....	.....	.....	.....	1,013	.....
Sweden	4,249	2,402	200	867	.....	.....	1,278	3,715	.....	.....	340	665	.....
Switzerland	1,365	40	.....	.....	.....	.....	14,445	8,355	480	392	.....	.....	.....
England	12,023	10,644	5,769	112,744	12,289	27,251	10,174	5,497	6,241	6,350	381	5,409	2,038
Scotland	454	226	439	.....	1,464	1,997	.....	.....	.....	.....	.....	236	347
Ireland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Jugoslavia, Albania, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$28,577	$17,054	$9,455	$160,298	14,562	$31,918	39,732	$37,746	13,514	$15,348	$2,753	$12,267	$4,384
NORTH AMERICA													
Canada	$10,682	$10,471	$8,914	$4,180	1,154	$1,769	686	$1,864	7,748	$6,237	$3,761	$10,239	$2,359
British Honduras	.....	40	.....	.....	.....	.....	.....	.....	264	317	47	.....	.....
Costa Rica	179	173	108	.....	.....	.....	.....	.....	.....	.....	260	.....	628
Guatemala	.....	584	588	.....	.....	.....	30	60	2,262	1,816	2,015	302	188
Honduras	122	383	104	.....	.....	.....	492	242	779	754	575	.....	85
Nicaragua	539	567	414	.....	13	45	.....	.....	1,320	1,326	777	.....	200
Panama	168	15,908	316	.....	87	266	241	493	3,677	3,056	1,168	142	1,123
Salvador	.....	569	340	.....	.....	.....	.....	.....	.....	.....	318	261	.....
Mexico	19,453	15,943	5,825	871	28	123	2,179	1,732	56,341	37,352	25,391	4,099	7,366
Miquelon and St. Pierre Islands	.....	.....	.....	.....	810	2,599	.....	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador	1,336	199	78	.....	5,912	17,221	138	123	5,280	3,165	469	.....	5,065
Bermuda	16	13	.....	.....	28	79	11	12	450	541	81	.....	.....
Barbados	.....	.....	.....	.....	.....	.....	.....	.....	403	296	.....	108	.....
Jamaica	.....	34	48	.....	.....	.....	.....	.....	1,643	1,389	.....	.....	.....
Trinidad and Tobago	.....	171	440	.....	.....	.....	.....	.....	312	239	84	55	.....
Other British West Indies	187	113	107	.....	.....	.....	.....	.....	1,592	1,434	282	.....	245
Cuba	1,080	11,992	9,410	.....	.....	.....	2,483	1,820	68,255	44,321	10,191	4,645	17,674
Dominican Republic	397	205	317	.....	.....	.....	.....	.....	9,104	7,053	138	52	907
Dutch West Indies	.....	.....	67	.....	.....	.....	.....	.....	8,938	6,475	17	196	.....
French West Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Haiti	126	82	132	.....	.....	.....	.....	.....	1,947	1,727	333	30	57
Virgin Islands of United States	.....	18	.....	.....	.....	.....	.....	.....	198	244	.....	.....	.....
TOTALS, NORTH AMERICA	$34,265	$57,465	$27,208	$5,051	8,032	$25,102	6,260	$6,346	170,513	$117,742	$45,907	$20,129	$35,897
SOUTH AMERICA													
Argentina	$8,215	$10,895	$421	$379	.....	.....	72	$50	131,906	$104,724	$9,530	$26,623	$1,490
Bolivia	4,316	275	.....	.....	100	$755	24	80	.....	.....	.....	.....	310
Brazil	7,077	5,897	2,098	.....	.....	.....	1,186	992	829	699	.....	3,483	.....
Chile	8,620	5,391	2,387	.....	3	20	195	166	48	113	57	1,810	811
Colombia	1,063	2,117	429	.....	4	26	.....	.....	1,908	1,882	2,948	1,260	461
Ecuador	1,968	2,547	.....	.....	.....	.....	.....	.....	4,000	3,337	112	100	.....
British Guiana	.....	220	59	.....	.....	.....	.....	.....	.....	.....	.....	73	147
French Guiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	113	.....	.....
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Paraguay	722	.....	.....	.....	.....	.....	24	19	198	218	223	222	.....
Peru	2,016	3,225	1,460	.....	.....	.....	1,050	506	7,949	6,354	556	1,221	.....
Uruguay	901	.....	459	.....	120	279	36	33	50	32	1,516	768	158
Venezuela	728	1,075	1,037	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, SOUTH AMERICA	$35,626	$31,642	$8,350	$379	227	$1,080	2,587	$1,846	146,888	$117,359	$15,055	$35,560	$3,387
ASIA													
Aden	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	$13,933	$982	$454	.....	.....	.....	.....	.....	4,496	$5,256	.....	$1,658	.....
Ceylon	.....	939	.....	.....	.....	.....	.....	.....	288	207	.....	82	.....
Straits Settlements	.....	1,250	.....	.....	.....	.....	.....	.....	1,184	901	.....	.....	.....
China	2,759	1,459	1,341	$2,547	.....	.....	9,399	$8,467	651	686	$465	2,594	.....
Chosen	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Java and Madura	423	811	1,144	.....	.....	.....	.....	.....	3,696	4,901	63	.....	$47
Other Dutch East Indies	.....	955	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
French Indo-China	4,136	483	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hejaz, Arabia, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	891	24	248	.....	48	$136	456	375	.....	.....	40	159	.....
Japan	16,148	14,092	5,039	4,184	9,285	23,207	13,504	12,513	.....	.....	.....	255	.....
Kwangtung, leased territory	.....	.....	.....	.....	.....	.....	2,832	2,830	.....	.....	.....	.....	.....
Palestine and Syria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philippine Islands	1,336	4,005	2,126	.....	.....	.....	1,440	1,142	15,428	17,587	10,024	6,684	1,106
Siam	.....	.....	39	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, ASIA	$39,626	$25,000	$10,391	$6,731	9,333	$23,343	27,631	$25,327	25,743	$29,538	$10,592	$11,432	$1,153

United States by Countries During June, 1924

Pneumatic Casings			Solid Tires		Pneumatic Tubes			Tire Repair Materials	Hard Rubber Goods			Rubber Water Bottles and Fountain Syringes	Other Druggists' Rubber Sundries	Bathing Caps	Rubber Toys, Balls and Balloons
Automobile			Automobile and Motor Truck		Automobile				Battery Jars and Accessories	Other Electrical Supplies					
Number	Value	Others Value	Value	Others Value	Number	Value	Others Value	Value	Value	Value	Others Value	Value	Value	Value	Value
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
557	$15,490	.....	.....	.....	262	$866	.....	$48	.....	.....	$5,491	$65	$7	$369	$1,417
25	245	.....	.....	.....	60	86	.....	.....	.....	.....	.....	.....	.....	.....	.....
65	970	.....	$1,091	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7,208	60,477	275	1,124	.....	6,822	8,338	.....	1,865	.....	$25	.....	58	1,034	618	445
1,137	17,484	.....	.....	.....	1,262	2,471	.....	.....	.....	.....	.....	.....	.....	.....	.....
572	12,323	597	.....	.....	357	1,539	.....	873	.....	.....	4,335	118	3,796	1,294	3,598
134	3,676	.....	1,960	.....	134	508	.....	463	.....	.....	177	.....	196	.....	434
445	6,982	.....	3,575	.....	490	955	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	181	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
594	5,090	1,247	292	.....	.....	.....	$362	150	.....	.....	.....	49	746	119	480
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
69	611	.....	.....	$80	114	198	.....	51	.....	.....	.....	.....	.....	.....	.....
2,007	27,449	2,727	1,563	.....	1,093	1,566	374	539	.....	.....	20	80	813	417	3,451
2,269	25,741	93	1,348	.....	2,501	5,340	137	624	$310	.....	.....	.....	497	15	38
180	1,343	.....	.....	.....	144	188	45	.....	.....	.....	.....	.....	.....	.....	.....
330	8,487	.....	1,687	.....	247	1,120	.....	1,222	.....	.....	.....	191	15	.....	103
3,129	51,025	1,514	1,614	.....	3,048	6,039	294	1,651	.....	.....	.....	112	1,205	253	1,775
810	17,918	626	.....	.....	602	1,738	95	.....	.....	.....	10	.....	385	.....	137
10,711	154,817	608	65,017	15	8,400	14,301	4	2,033	.....	.....	16,604	2,854	18,747	15,330	21,733
.....	.....	.....	1,805	.....	.....	.....	.....	.....	.....	.....	.....	.....	480	.....	2,745
.....	.....	.....	1,313	.....	.....	.....	.....	236	.....	.....	.....	.....	.....	.....	43
108	938	.....	.....	.....	54	118	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	418	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30,397	$411,665	$7,687	$82,389	$95	25,590	$45,371	$1,315	$9,755	$310	$25	$26,637	$3,527	$27,921	$18,415	$36,399
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3,282	$33,068	$1,062	$2,969	$1,634	1,890	$3,830	$490	$11,424	$16,646	$2,917	$9,342	$100	$9,272	$5,029	$9,052
4	43	.....	.....	.....	3	8	.....	.....	.....	.....	.....	.....	11	.....	39
157	3,299	.....	.....	347	161	452	.....	28	.....	.....	.....	13	86	.....	.....
156	2,782	10	21	104	223	493	.....	.....	.....	280	.....	12	234	.....	121
112	1,615	.....	1,093	.....	160	298	.....	.....	.....	.....	11	9	57	21	4
87	909	.....	.....	.....	207	324	.....	18	58	.....	23	.....	91	.....	53
1,114	16,780	662	715	944	1,000	2,309	56	468	.....	.....	296	454	828	120	87
176	3,707	.....	.....	.....	310	854	.....	100	.....	.....	19	54	193	.....	482
15,945	131,711	3,516	4,732	1,145	10,245	18,640	331	3,657	.....	198	6,469	321	2,727	115	2,466
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
166	2,543	.....	54	56	163	279	.....	17	.....	.....	.....	.....	4,661	.....	.....
.....	.....	.....	.....	202	.....	.....	.....	.....	.....	.....	.....	.....	.....	27	.....
.....	.....	.....	.....	222	66	83	.....	.....	.....	.....	.....	23	.....	.....	.....
183	2,304	.....	1,164	.....	67	132	.....	209	30	.....	.....	.....	.....	.....	.....
179	2,236	.....	176	.....	50	100	.....	.....	.....	.....	.....	.....	.....	.....	.....
141	1,542	75	1,138	48	121	183	.....	17	.....	27	.....	.....	35	.....	99
6,244	79,053	343	6,042	854	13,734	25,955	24	3,506	50	.....	609	1,255	3,192	266	6,427
1,030	9,619	.....	2,133	.....	1,746	2,569	.....	190	.....	.....	78	.....	492	.....	193
120	1,376	.....	.....	.....	169	285	.....	.....	.....	.....	.....	.....	24	.....	4
2	156	.....	.....	.....	2	18	.....	.....	.....	.....	.....	.....	.....	.....	.....
324	4,587	.....	.....	292	450	837	16	206	.....	.....	.....	.....	.....	.....	.....
12	135	.....	56	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	.....	.....
29,434	$297,465	$5,668	$20,293	$5,848	30,767	$57,649	$917	$19,840	$16,784	$3,422	$16,847	$2,241	$21,945	$5,578	$19,027
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5,354	$101,092	$1,400	$3,659	$3,353	7,388	$16,675	$118	$3,709	.....	.....	$463	.....	$3,541	$134	$1,505
66	1,312	.....	.....	.....	72	163	.....	.....	.....	.....	.....	.....	.....	.....	274
3,085	34,268	.....	2,316	.....	1,142	4,400	308	1,505	.....	.....	698	$1,335	349	182	56
206	4,661	.....	85	781	1,086	1,799	36	22	$13	$6	242	.....	251	.....	336
612	8,317	16	2,144	233	837	1,893	.....	155	.....	.....	583	95	642	86	313
49	937	.....	80	.....	298	588	.....	50	.....	.....	.....	100	59	.....	191
8	260	.....	168	.....	6	33	.....	.....	.....	613	16	.....	.....	.....	.....
17	162	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	24	28	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2,742	41,893	303	1,664	126	2,643	5,477	158	475	.....	.....	16	37	310	.....	708
1,516	20,288	.....	304	.....	1,136	1,985	.....	.....	110	.....	.....	194	576	89	194
1,212	15,225	27	409	256	1,763	3,763	15	75	.....	.....	18	170	147	.....	218
14,867	$228,415	$1,746	$10,829	$4,749	16,395	$36,804	$635	$5,991	$123	$619	$2,036	$1,931	$5,875	$491	$3,795
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	$324	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,175	16,174	.....	$3,516	$4,125	1,179	$2,330	.....	$415	.....	.....	.....	$188	$127	.....	$1,699
196	1,994	.....	1,107	.....	12	23	.....	.....	.....	.....	.....	.....	67	.....	.....
745	9,694	.....	372	.....	250	793	.....	.....	.....	$60	$91	.....	.....	$29	.....
604	7,391	.....	51	.....	53	130	.....	65	$107	.....	17	2,954	746	41	492
85	614	.....	.....	.....	50	63	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,984	25,652	$276	6,022	9,779	1,276	3,102	.....	938	.....	.....	.....	70	384	.....	.....
228	3,376	.....	3,006	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	91	.....	.....	.....	75	91	.....	.....	.....	.....	.....	28	24	.....	140
134	1,084	.....	.....	.....	.....	.....	.....	65	.....	.....	.....	.....	.....	.....	.....
9,462	90,999	3,930	5,288	.....	7,640	11,085	$750	1,942	184	600	2,464	73	43	1,495	200
52	550	.....	.....	.....	50	77	.....	.....	.....	.....	.....	.....	.....	.....	.....
284	2,795	.....	.....	.....	260	387	.....	.....	.....	.....	.....	.....	218	.....	.....
3,233	43,844	900	8,740	6,446	5,088	9,330	184	1,585	35	.....	.....	267	2,711	30	.....
20	173	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18,355	$204,755	$5,106	$28,102	$20,350	15,928	$27,411	$934	$5,010	$326	$660	$2,572	$3,580	$4,320	$1,595	$2,531

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth Value	Waterproofed Clothing Value
OCEANIA													
Australia	$6,583	$5,785	$3,746	.....	288	$724	1,320	$776	3,356	$3,663	.....	$3,614	.....
British Oceania	.....	.....	.....	.....	.....	.....	24	15	502	456	.....	.....	.....
French Oceania	.....	60	65	.....	.....	.....	.....	.....	830	918	$59	53	.....
New Zealand	905	2,021	1,421	.....	1,016	3,167	.....	.....	.....	.....	.....	2,373	.....
Other Oceania	.....	.....	.....	.....	.....	.....	.....	.....	494	555	.....	.....	.....
TOTALS, OCEANIA	$7,488	$7,866	$5,232	.....	1,304	$3,891	1,344	$791	5,182	$5,592	$59	$6,040	.....
AFRICA													
British West Africa	.....	$20	.....	.....	6	$130	.....	.....	24	$42	.....	.....	.....
British South Africa	$28,504	21,820	$1,826	$109	192	583	972	$2,478	1,242	1,479	$1,614	$2,244	$4,858
British East Africa	.....	983	.....	.....	.....	.....	.....	.....	.....	.....	.....	69	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	80	.....	.....
Egypt	384	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Algeria and Tunis	3,961	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morocco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	2,529	2,345	1,475	.....	.....	.....	.....	.....	.....	.....	205	934	.....
Other Portuguese Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, AFRICA	$35,378	$25,182	$3,301	$109	198	$713	972	$2,478	1,266	$1,521	$1,899	$3,247	$4,858
GRAND TOTALS	$180,960	$164,209	$63,937	$172,568	33,656	$86,047	78,526	$74,534	363,106	$287,100	$76,255	$88,675	$49,679

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

UNMANUFACTURED	May, 1923 Pounds	May, 1923 Value	May, 1924 Pounds	May, 1924 Value
Rubber, gutta percha, etc.,				
From United Kingdom	91,927	$33,013	834,074	$220,727
United States	1,982,473	603,781	2,382,067	550,113
Belgium	.....	.....	38,997	6,978
Ceylon	.....	.....	.....	.....
Straits Settlements	576,720	183,801	67,225	24,509
Dutch East Indies	112,224	30,851	.....	.....
France	.....	.....	.....	.....
Netherlands	.....	.....	.....	.....
Other countries	.....	.....	.....	.....
Totals	2,763,344	$851,446	3,322,363	$794,327
Rubber recovered	174,163	15,936	170,553	17,004
Rubber powdered and rubber or gutta percha scrap	507,097	23,714	535,330	17,322
Balata	25	40	724	576
Rubber substitutes	173,876	22,444	27,158	4,308
Totals	3,618,505	$62,134	4,056,128	$833,537
PARTLY MANUFACTURED				
Hard rubber sheets and rods	13,949	5,148	16,408	9,291
Hard rubber tubes	.....	1,910	.....	2,076
Rubber thread, not covered	17,327	20,167	5,193	5,782
Total	31,276	$27,225	21,601	$17,149
MANUFACTURED				
Belting	.....	11,945	.....	16,230
Hose	.....	13,668	.....	8,945
Packing	.....	4,762	.....	3,947
Boots and shoes, *pairs*	3,750	8,970	11,121	19,535
Clothing, including waterproofed	.....	24,886	.....	22,252
Gloves	.....	1,100	.....	1,527
Hot water bottles	.....	653	.....	827
Tires, solid, *number*	1,470	4,871	405	7,165
Tires, pneumatic, *number*	6,052	82,603	8,617	90,319
Inner tubes, *number*	5,470	11,379	5,865	13,316
Elastic, round or flat	.....	24,889	.....	18,676
Mats and matting	.....	2,381	.....	1,718
Cement	.....	7,297	.....	4,669
Other rubber manufactures	.....	159,056	.....	159,392
Totals	.....	$358,460	.....	$368,518
Total rubber imports	.....	$1,299,265	.....	$1,219,204

Exports of Domestic and Foreign Rubber Goods

	May, 1923 Produce of Canada Value	May, 1923 Re-exports of Foreign Goods Value	May, 1924 Produce of Canada Value	May, 1924 Re-exports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$11,296	.....	$7,151	.....
Totals	$11,296	.....	$7,151	.....
MANUFACTURED				
Belting	23,976	.....	40,821	.....
Canvas shoes with rubber soles	74,331	.....	134,789	.....
Boots and shoes	26,559	.....	28,401	.....
Clothing, including waterproofed	1,071	.....	4,517	.....
Hose	5,583	.....	7,230	.....
Tires, casings	664,663	.....	536,130	.....
Inner tubes	58,877	.....	92,773	.....
Pneumatic	.....	.....	.....	.....
Solid	8,670	.....	15,710	.....
Vehicle	.....	.....	.....	.....
Other rubber manufactures	15,655	17,292	23,623	21,090
Totals	$879,385	$17,292	$883,394	$21,090
Total rubber exports	$890,681	$17,292	$890,545	$21,090

HEX-TOP GREASE CUP

An improved compression grease cup has been designed to eliminate the inconveniences incidental to the use of the ordinary type. The improvement consists in a top of hexagonal shape which provides a good grip for either the hand or a wrench. The cup is provided with a raised slot so that it can be turned with a screwdriver when it is so located that it is inconvenient for hand or wrench adjustment.—Link Belt Co., 910 S. Michigan avenue, Chicago, Illinois.

United States Crude and Waste Rubber Imports for 1924 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Total 1924	Total 1923	Balata	Miscellaneous	Waste
January, *tons*	20,611	731	181	88	.....	.....	21,611	31,197	23	249	95
February	29,977	1,501	192	93	.....	.....	31,763	24,220	47	799	53
March	16,009	980	663	33	67	.....	17,752	33,916	86	98	184
April	41,438	686	139	9	164	.....	42,436	31,588	55	1,371	114
May	22,466	1,176	70	17	185	.....	23,914	36,184½	55	139	104
June	17,810	737	46	115	132	.....	18,840	32,934	15	796	10
July	16,890	1,199	170	43	167	.....	18,469	18,609	26	1,335	50
Totals, 7 months, 1924, *tons*	165,201	7,010	1,461	398	715	.....	174,785	.....	307	4,787	610
Totals, 7 months, 1923	196,406	8,524	2,763	292	637	26½	.....	208,648½	404	4,566	3,218

Compiled from Rubber Association statistics.

United States by Countries During June, 1924 *(Continued)*

	Pneumatic Casings			Solid Tires		Pneumatic Tubes				Hard Rubber Goods							
	Automobile			Automobile and Motor Truck		Automobile											
	Number	Value	Others Value	Value	Others Value	Number	Value	Others Value	Tire Repair Materials Value	Battery Jars and Accessories Value	Other Electrical Supplies Value	Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
	6,785	$103,374	$1,062	$22,191	.....	9,969	$21,262	.....	$4,852	$94	.....	$125	$753	$3,164	$2,706	$5,468
	24	316	.....	.....	.....	.....	.....	.....	176	.....	.....	.....	.....	.....	.....	.....
	25	459	.....	269	$100	33	48	$45	.....	43	.....	.....	.....	.....	.....	.....
	3,852	50,768	289	26,696	.....	2,968	5,571	.....	2,429	56	.....	.....	11	972	6,969	4,015
	21	275	16	.....	.....	27	63	.....	.....	.....	.....	.....	.....	.....	.....	.....
	10,707	$155,192	$1,367	$49,156	$100	12,997	$26,944	$45	$7,457	$193	.....	$125	$764	$4,136	$9,675	$9,483
	156	$1,564	.....	.....	.....	129	$469	.....	.....	.....	.....	.....	.....	.....	.....	.....
	2,081	31,370	$732	$584	.....	4,031	7,826	$86	$1,951	.....	.....	$191	$51	$1,481	$1,279	$1,867
	516	6,887	.....	.....	.....	104	224	.....	.....	.....	.....	.....	.....	.....	.....	.....
	20	443	.....	833	.....	14	49	.....	.....	.....	.....	.....	.....	.....	.....	.....
	71	1,059	.....	26	.....	63	90	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	61	.....	.....
	33	385	.....	.....	.....	28	56	.....	.....	.....	.....	.....	.....	.....	.....	.....
	2,877	$41,708	$732	$1,443	.....	4,369	$8,714	$86	$1,951	.....	.....	$191	$91	$1,542	$1,279	$1,867
	106,637	$1,339,200	$22,306	$192,212	$51,142	106,049	$202,893	$3,932	$50,004	$17,736	$4,726	$48,408	$12,134	$65,739	$37,033	$73,102

United Kingdom Rubber Statistics

Imports

	June, 1923		June, 1924	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Crude rubber				
From—				
Straits Settlements	4,034,300	£245,245	4,074,000	£218,922
Federated Malay States	1,959,800	115,692	1,890,700	102,714
British India	374,000	22,657	315,500	15,855
Ceylon and Dependencies	1,610,900	96,719	1,202,200	58,999
Other Dutch Possessions in Indian Seas	175,000	9,998	192,600	11,009
Dutch East Indies (except other Dutch Possessions in Indian Seas)	965,300	58,335	1,046,000	51,989
Other countries in East Indies and Pacific not elsewhere specified	145,600	8,515	31,500	1,575
Brazil	552,800	29,285	245,900	10,332
Peru	41,100	1,736	.....	.....
South and Central America (except Brazil and Peru)	.....	.....	.....	.....
West Africa:				
French West Africa	114,300	4,397	51,900	1,949
Gold Coast	9,900	476	24,700	1,024
Other parts of West Africa	34,200	1,366	143,500	5,765
East Africa, including Madagascar	32,900	1,535	23,800	1,137
Other countries	75,700	5,432	24,300	1,034
Totals	10,125,800	£601,388	9,266,600	£482,304
Waste and reclaimed rubber	180,000	2,398	401,300	5,456
Gutta percha and balata	625,000	74,989	327,900	35,838
Rubber substitutes	1,000	19	.....	.....
Totals	10,931,800	£678,794	9,995,800	£523,598
MANUFACTURED				
Boots and shoes....*doz. pairs*	10,879	£14,585	12,405	£22,708
Tires and tubes				
Pneumatic				
Outer covers	.....	211,399	.....	136,218
Inner tubes	.....	24,297	.....	36,013
Solid tires	.....	19,196	.....	26,683
Other rubber manufactures	.....	93,859	.....	106,536
Totals	.....	£363,336	.....	£328,158

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	586,000	£4,100	689,600	£7,404
Rubber substitutes	78,000	1,637	89,800	2,017
Totals	664,000	£5,737	779,400	£9,421
MANUFACTURED				
Boots and shoes....*doz. pairs*	16,073	£24,906	23,066	£36,803
Tires and tubes				
Pneumatic				
Outer covers	.....	137,056	.....	100,863
Inner tubes	.....	25,670	.....	30,909
Solid tires	.....	27,304	.....	32,536
Other rubber manufactures	.....	238,098	.....	245,631
Totals	.....	£453,034	.....	£446,741

Exports—Colonial and Foreign

	June, 1923		June, 1924	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Crude rubber				
To—				
Russia	87,200	£4,748	.....	.....
Sweden, Norway and Denmark	60,800	4,077	49,600	£3,700
Germany	1,348,700	84,070	995,600	57,580
Belgium	153,200	9,171	237,800	13,266
France	2,680,000	160,340	3,560,200	162,668
Spain	17,400	1,060	43,600	2,211
Italy	728,800	45,039	878,400	38,392
Austria	.....	.....	65,400	2,840
Hungary	.....	.....	200	21
Other European countries	64,400	3,795	437,200	27,486
United States	8,861,000	604,783	3,053,500	162,619
Canada	327,000	20,500	591,800	33,679
Other countries	39,800	2,463	147,200	7,483
Totals	14,368,300	£940,046	10,060,500	£511,945
Waste and reclaimed rubber	.....	.....	.....	.....
Gutta percha and balata	45,900	6,234	43,900	5,375
Rubber substitutes	.....	.....	.....	.....
Totals	14,414,200	£946,280	10,104,400	£517,320
MANUFACTURED				
Boots and shoes....*doz. pairs*	147	£296	288	£542
Tires and tubes				
Pneumatic				
Outer covers	.....	8,823	.....	42,822
Inner tubes	.....	689	.....	5,480
Solid tires	.....	1,376	.....	2,650
Other rubber manufactures	.....	3,374	.....	4,216
Totals	.....	£14,558	.....	£55,710

Landings, Deliveries and Stocks in London and Liverpool During June

	Landed for June	Delivered for June	Stocks, June 30		
	Tons	Tons	1924 Tons	1923 Tons	1922 Tons
London:					
Plantation	3,440	3,918	50,851	*50,663	71,473
Other grades	....	3	115	105	124
Liverpool:					
Plantation	†192	†330	†4,132	†5,559	†7,713
Pará and Peruvian	296	335	677	275	920
Other grades	....	....	210	224	428
Total tons, London and Liverpool	3,928	4,586	55,985	56,826	80,658

*Adjusted owing to stock-taking at various wharves.
†Official returns from the six recognized public warehouses.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases
JULY 25. By "Francis," Brazil.					
H. A. Astlett & Co.	92	....	....	122	....
General Rubber Co.	....	....	....	....	12
L. Littlejohn & Co., Inc.	213	....	....	308	....
Poel & Kelly, Inc.	133	1	12	325	....
Fred Stern & Co., Inc.	30	....	....	....	....
AUGUST 6. By "Bernini," Pará, Iquitos and Manaós.					
H. A. Astlett & Co.	247	2	30	60	....
Paul Bertuch & Co.	31	....	....	....	....
General Rubber Co.	309	11	....	165	*58
L. Littlejohn & Co., Inc.	65	2	3	135	....
Meyer & Brown, Inc.	....	....	2	257	....
Poel & Kelly, Inc.	216	28	2	329	....
Ultramares Corp.	22	....	7	....	....

*Includes six cases of mixed grades.

Plantations

JULY 18 By "President Harrison," Singapore.
Baird Rubber & Trading Co., Inc. 245 cases
Meyer & Brown, Inc. 260 cases

JULY 20. By "Minnewaska," Europe.
H. A. Astlett & Co. 37 cases
L. Littlejohn & Co., Inc. 57 cases

JULY 20. By "Venetia," London.
Poel & Kelly, Inc. 2,267 cases

JULY 22. By "American Merchant," Europe.
L. Littlejohn & Co., Inc. 155 cases

JULY 22. By "Celtic," Europe.
L. Littlejohn & Co., Inc. 222 cases

JULY 24. By "Anniston City," Far East.
Poel & Kelly, Inc. 42 cases

JULY 24. By "Stockwell," Far East.
Poel & Kelly, Inc. 223 cases

JULY 25. By "Stockwell," Europe.
L. Littlejohn & Co., Inc. 392 cases

JULY 26. By "Anniston City," Far East.
L. Littlejohn & Co., Inc. 168 cases

JULY 26. By "City of Oran," Far East.
H. A. Astlett & Co. 2,381 cases
H. A. Astlett & Co. *213 cases
Baird Rubber & Trading Co., Inc. 720 cases
Paul Bertuch & Co. 250 cases
Hood Rubber Co. *595 pkgs.
J. T. Johnstone & Co., Inc. 1,988 cases
L. Littlejohn & Co., Inc. 1,631 cases
Meyer & Brown, Inc. 1,347 cases
H. Muehlstein & Co., Inc. 1,450 cases
Poel & Kelly, Inc. 2,512 cases
Vernon Metal & Produce Co., Inc. 875 cases

JULY 26. By "New Amsterdam."
H. Muehlstein & Co., Inc. 144 cases

JULY 28. By "Celtic Prince," Far East.
H. A. Astlett & Co. 2,952 cases
H. A. Astlett & Co. *227 cases
Baird Rubber & Trading Co., Inc. 1,712 cases
General Rubber Co. 733 cases
Hood Rubber Co. *126 pkgs.
J. T. Johnstone & Co., Inc. 596 cases
L. Littlejohn & Co., Inc. 7,315 cases
Meyer & Brown, Inc. 381 cases
H. Muehlstein & Co., Inc. 1,350 cases
Poel & Kelly, Inc. 3,697 cases
Vernon Metal & Produce Co., Inc. 705 cases

JULY 27. By "Chisfield," Far East.
Poel & Kelly, Inc. 112 cases

JULY 28. By "Challenger," Far East.
Baird Rubber & Trading Co., Inc. 100 cases
L. Littlejohn & Co., Inc. 2,140 cases
Meyer & Brown, Inc. 264 cases
H. Muehlstein Co., Inc. 50 cases
Poel & Kelly, Inc. 689 cases

*Arrived at Boston.

JULY 28. By "Lancastria," London.
Poel & Kelly, Inc. 834 cases

JULY 31. By "President Van Buren," Far East.
Baird Rubber & Trading Co., Inc. 400 cases
Hood Rubber Co. *246 pkgs.
J. T. Johnstone & Co., Inc. 25 cases
L. Littlejohn & Co., Inc. 838 cases

AUGUST 1. By "Nagana Maru," Far East.
L. Littlejohn & Co., Inc. 208 cases

AUGUST 4. By "Oanfa," Far East.
H. A. Astlett & Co. 1,033 cases
H. A. Astlett & Co. *112 cases
Baird Rubber & Trading Co., Inc. 1,261 cases
Baird Rubber & Trading Co., Inc. *200 cases
Paul Bertuch & Co. *150 cases
General Rubber Co. 750 cases
Hood Rubber Co. *381 pkgs.
J. T. Johnstone & Co., Inc. 1,937 cases
L. Littlejohn & Co., Inc. 6,499 cases
Meyer & Brown, Inc. 1,494 cases
H. Muehlstein & Co., Inc. 810 cases
Poel & Kelly, Inc. 6,068 cases
Vernon Metal & Produce Co., Inc. 315 cases

AUGUST 4. By "Havana Maru," Far East.
Baird Rubber & Trading Co., Inc. 400 cases
Vernon Metal & Produce Co., Inc. 670 cases

AUGUST 8. By "Rotterdam," Rotterdam.
J. T. Johnstone & Co., Inc. 321 cases

AUGUST 11. By "Atlanta City," Far East.
H. A. Astlett & Co. 150 cases
Baird Rubber & Trading Co., Inc. 125 cases
General Rubber Co. 4,999 cases
J. T. Johnstone & Co., Inc. 100 cases
L. Littlejohn & Co., Inc. 1,288 cases
Meyer & Brown, Inc. 130 cases
Poel & Kelly, Inc. 1,183 cases

AUGUST 11. By "Deucalion," Far East.
H. A. Astlett & Co. 169 cases
Baird Rubber & Trading Co., Inc. 301 cases
General Rubber Co. 2,879 cases
Hood Rubber Co. *79 pkgs.
J. T. Johnstone & Co., Inc. 134 cases
L. Littlejohn & Co., Inc. 2,068 cases
Meyer & Brown, Inc. 137 cases
Poel & Kelly, Inc. 4,504 cases

AUGUST 11. By "Diomed," Far East.
H. A. Astlett & Co. 1,402 cases
H. A. Astlett & Co. *310 cases
Baird Rubber & Trading Co., Inc. 540 cases
General Rubber Co. 2,460 cases
Hood Rubber Co. *890 pkgs.
Hood Rubber Co. 15 tons
J. T. Johnstone & Co., Inc. 700 cases
L. Littlejohn & Co., Inc. 3,353 cases
Meyer & Brown, Inc. 500 cases
Poel & Kelly, Inc. 4,889 cases
Fred Stern & Co., Inc. 640 cases
Vernon Metal & Produce Co., Inc. 230 cases

AUGUST 13. By "Albania," London.
L. Littlejohn & Co., Inc. 685 cases
Meyer & Brown, Inc. 1,680 cases

AUGUST 14. By "Nortoman," Antwerp.
Paul Bertuch & Co. 104 cases

AUGUST 15. By "Egremont," Singapore.
Baird Rubber & Trading Co., Inc. 906 cases

AUGUST 15. By "Kathlamba," Far East.
L. Littlejohn & Co., Inc. 1,053 cases

AUGUST 15. By "President Hayes," Singapore.
Baird Rubber & Trading Co., Inc. 150 cases
J. T. Johnstone & Co., Inc. 128 cases
L. Littlejohn & Co., Inc. 1,294 cases
Fred Stern & Co., Inc. 112 cases

AUGUST 18. By "Volendam," Europe.
J. T. Johnstone & Co., Inc. 468 cases
L. Littlejohn & Co., Inc. 451 cases

AUGUST 18. By "Minnewaska," Europe.
L. Littlejohn & Co., Inc. 779 cases

AUGUST 20. By "Kasama," Singapore.
Fred Stern & Co., Inc. 260 cases

Africans

AUGUST 6. By "Laconia," Liverpool.
Poel & Kelly, Inc. 11 casks

AUGUST 11. By "Deucalion," Far East.
Hood Rubber Co. 36 cases

AUGUST 18. By "Scythia," Liverpool.
Poel & Kelly, Inc. 11 casks
Poel & Kelly, Inc. 1,500 baskets

Balata

JULY 25. By "Francis," Manaós.
Paul Bertuch & Co. 5 cases

JULY 31. By "Surinam," French Guiana.
Middleton & Co., Ltd. 20 bales

AUGUST 6. By "Bernini," Manaós.
H. A. Astlett & Co. 25 cases
Paul Bertuch & Co. 8 cases

AUGUST 18. By "Martinique," Cartagan.
Ultramares Corp. 10 cases

Guayule

JULY 25, AUG. 16. By "Railways," Mexico.
Continental Rubber Co. 3,180 cases

Gutta Siak

AUGUST 10. By "Slavic Prince," Singapore.
Fred Stern & Co., Inc. *42 cases

Rubber Latex

AUGUST 11. By "Atlanta City," Far East.
General Rubber Co. 198,817 pounds

TALC AND SOAPSTONE PRODUCTION

Large sales of American talc and soapstone in the year 1920 were followed by a great decline in the industry in 1921 to an average of 40 per cent less than that of the five years preceding. In 1922, however, there was a decided recovery, the sales of talc and soapstone during that year reaching nearly 200,000 tons, the approximate average for 1915-1920. In this production Vermont, New York, Virginia, and California continued to lead the other states. It has been estimated that the United States produced 57 per cent of the world's total supply in 1913, 58 per cent in 1920, and 59 per cent in 1922. In 1921 the rubber industry consumed 10,300 short tons of ground talc, value $97,000.

WOMEN IN NEW JERSEY RUBBER INDUSTRIES

During the last four months of 1922 a survey was made by the Women's Bureau of the United States Department of Labor in connection with the employment of women in the industries of the state of New Jersey. Forty-three cities and towns of that state were visited, the factories including eleven plants manufacturing rubber and rubber products. In these eleven plants 546 women were employed, the median week's earnings at the time of the study being $14.85. Overtime did not constitute a serious problem for women workers in New Jersey. They were getting the benefit of the comparatively high industrial standard in regard to scheduled hours.

United Kingdom Imports and Reexports of Crude Rubber for the First Six Months of 1922, 1923 and 1924

The following statistics show the trend of British foreign trade in crude rubber during the first half of 1924, as compared with the same periods for 1922 and 1923:

BRITISH IMPORTS OF RUBBER, JANUARY-JUNE, 1922, 1923 AND 1924

(Figures in Long Tons)

From	1922	1923	1924
Straits Settlements	6,514	14,037	12,298
Malay States	13,689	6,839	6,016
British India	1,842	1,938	2,090
Ceylon	4,732	4,811	4,365
Netherlands East Indies	2,399	2,607	3,130
Other Dutch Possessions in Indian Seas	988	388	602
Other countries in East Indies and Pacific	652	318	139
Brazil	1,686	1,686	1,632
Peru	.....	31	16
South and Central America	50	39	16
West Africa:			
French	5	323	405
Gold Coast	3	15	50
Other	57	142	183
East Africa and Madagascar	32	137	202
Other countries	87	164	193
Total	32,736	33,475	31,337

The above figures show that the total imports for the first half of 1924 are 2,138 tons less than for the corresponding period of 1923.

Receipts of plantation rubber from the Straits Settlements, Malay States, Ceylon and "Other Countries in East Indies and Pacific" were smaller this year; but recorded increases from British India, Netherlands, East Indies and "Other Dutch Possessions in Indian Seas." Imports of wild rubber from South America declined. Receipts from Africa and "Other Countries" showed increases.

REEXPORTS OF RUBBER, JANUARY-JUNE, 1922, 1923 AND 1924

(Figures in Long Tons)

To	1922	1923	1924
Russia	29	432	400
Sweden, Norway and Denmark	326	394	752
Germany	4,637	3,131	3,700
Belgium	705	868	968
France	6,557	8,212	9,748
Spain	249	104	218
Italy	1,212	2,050	2,541
Austria	70	.....	101
Hungary	1	20	20
Other Europe	685	409	567
United States	13,827	25,235	14,249
Canada	281	1,286	1,824
Other countries	162	181	228
Total	28,741	42,322	35,316

As seen from the above, reexports during the current period decreased to 35,316 long tons, against 42,322 tons a year ago, but somewhat exceeded those for the period in 1922. These figures show there has been an increase in reexports to all countries except Russia, Hungary and the United States.

The United States took 14,249 tons, as compared with 25,235 tons in 1923, and 13,827 tons in 1922.—H. N. Whitford, Chief Crude Rubber Section, Rubber Division, Department of Commerce, Washington, D. C.

Plantation Rubber Exports from Dutch East Indies

Java and Madura

	April		Four Months Ended April	
To—	1923 Kilos	1924 Kilos	1923 Kilos	1924 Kilos
Holland	218,000	607,000	1,048,000	1,515,000
Great Britain	552,000	401,000	1,864,000	2,200,000
Germany	25,000	19,000	91,000	149,000
France	.....	14,000	177,000	39,000
Italy	20,000	33,000	101,000	106,000
Canada	.....	.....	16,000	.....
United States	2,547,000	2,467,000	8,195,000	8,746,000
Singapore	105,000	166,000	481,000	861,000
Hongkong	.....	5,000	.....	18,000
Japan	.....	47,000	15,000	430,000
Australia	13,000	24,000	54,000	90,000
Other countries	.....	.....	.....	.....
Totals	3,480,000	3,783,000	12,042,000	14,154,000

Belawan-Deli

To—				
Holland	103,000	124,000	680,000	576,000
Great Britain	104,000	320,000	612,000	1,411,000
Germany	18,000	69,000	71,000	99,000
France	.....	25,000	17,000	45,000
Belgium	.....	.....	29,000	5,000
Italy	39,000	.....	39,000	36,000
United States	2,020,000	2,021,000	8,993,000	9,427,000
Singapore	240,000	75,000	1,090,000	338,000
Straits Settlements	6,000	.....	142,000	.....
Penang	54,000	67,000	135,000	316,000
Australia	.....	4,000	.....	4,000
Other countries	.....	7,000	.....	72,000
Totals	2,584,000	2,712,000	11,808,000	12,329,000

Plantation Rubber Exports from Dutch East Indies

Java and Madura

	May		Five Months Ended May	
To—	1923 Kilos	1924 Kilos	1923 Kilos	1924 Kilos
Holland	215,000	376,000	1,263,000	1,891,000
Great Britain	281,000	709,000	2,145,000	2,909,000
Germany	8,000	28,000	99,000	177,000
France	62,000	89,000	239,000	128,000
Italy	25,000	28,000	126,000	134,000
Canada	.....	.....	16,000	.....
United States	1,759,000	2,014,000	9,984,000	10,760,000
Singapore	133,000	216,000	614,000	1,077,000
Hongkong	.....	9,000	.....	27,000
Japan	25,000	104,000	40,000	534,000
Australia	27,000	120,000	81,000	210,000
Other countries	.....	9,000	.....	9,000
Totals	2,565,000	3,702,000	14,607,000	17,856,000

Belawan-Deli

To—				
Holland	112,000	207,000	792,000	783,000
Great Britain	38,000	286,000	650,000	1,697,000
Germany	19,000	62,000	90,000	161,000
France	5,000	13,000	22,000	58,000
Belgium	.....	.....	29,000	5,000
Italy	31,000	24,000	70,000	60,000
United States	2,363,000	2,058,000	11,356,000	11,485,000
Singapore	269,000	58,000	1,359,000	396,000
Straits Settlements	3,000	.....	145,000	.....
Penang	38,000	38,000	173,000	354,000
Australia	.....	.....	.....	4,000
Other countries	9,000	11,000	9,000	83,000
Totals	2,887,000	2,757,000	14,695,000	15,086,000

British Malaya

Rubber Exports

An official cablegram from Singapore states that the amount of rubber exported from British Malaya during the month of July was 21,670 tons. The amount of rubber imported during the month was 9,777 tons. In this latter figure no deduction has been made for moisture in the native rubber from the Netherlands East Indies. The following are comparative statistics:

	1923		1924	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Imports Tons
January	22,871	4,358	23,844	8,867
February	19,997	4,089	19,395	7,440
March	23,646	5,108	22,294	6,269
April	24,008	5,389	20,551	7,909
May	20,115	5,020	19,674	7,259
June	16,621	4,957	18,084	7,435
July	16,749	5,624	21,670	9,777

Distribution

The following is a comparative return of distribution of shipments during the months of June and July, 1924:

Destination	June, 1924 Tons	July, 1924 Tons
United Kingdom	2,787.06	*2,770
United States of America	11,711.73	*14,812
Continent of Europe	1,602.35	*1,789
British Possessions	225.63	*833
Japan	1,739.68	*1,451
Other Foreign Countries	17.23	*15
Totals	18,083.70	*21,670

A supplementary telegram from Singapore to the Malay States Information Agency states that dealers' stocks of rubber on July 31 were in Singapore 16,901 tons, and in Penang 2,621 tons.

* To the nearest ton.

INDIA RUBBER WORLD
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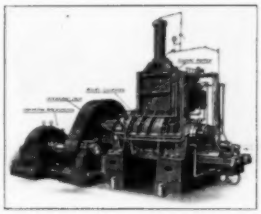
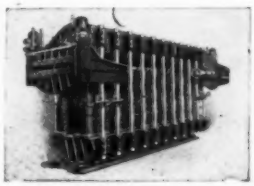
BIRMINGHAM

(TRADE MARK REGISTERED)



RUBBER MILL MACHINERY



Modern designs evolved by skilled engineers from our long experience with the rubber industry and the practical ideas of today, with a complete understanding of the requirements and the duty to be performed.

Birmingham machinery is a quality product, built to render the utmost in long service and satisfactory operation.

You may be absolutely sure you have obtained the best when you install Birmingham equipment.

Birmingham Iron Foundry

ENGINEERS FOUNDERS MACHINISTS

ESTABLISHED 1836 INCORPORATED 1850

Main Office and Works: Derby, Conn.

Representatives

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D. A. Comes, 403 West Grove Street, Westfield, N. J.
George L. Hurst, 785 Market St., San Francisco, Calif.

Our Publicity Page

What THE INDIA RUBBER WORLD Means to the Retailer

A REPORTER'S "nose for news" is as nothing compared with that of a man who successfully sells rubber products during a period of generally poor business against the keenest of competition. Witness the recent letter from the head of a progressive firm of rubber goods dealers in the Southwest which is reproduced herewith. The sentiment there expressed has come to us so often, both verbally and by letter, as to leave no doubt as to the correctness of our interpretation of what it means.

RATCLIFFE RUBBER CO.
2014 Commerce St.
Dallas, Texas

July 9, 1924

India Rubber World
25 West 45th St.
New York City

Gentlemen:

We look forward to the delivery of every issue of your magazine the pages of which we scan for news of the rubber world, a better source of information than which we know not of.

Very truly yours,
RATCLIFFE RUBBER COMPANY
(Signed) R. E. Ratcliffe
Manager

RER-MC

THE INDIA RUBBER WORLD is sometimes referred to as a manufacturer's paper. And so it is. But it would not be a good manufacturer's paper without devoting considerable space to the news and interests of distributers, jobbers and retailers of rubber goods, for merchandising is quite as important to the manufacturer as production, equipment and materials. And this makes THE INDIA RUBBER WORLD a merchandising as well as a manufacturing paper. The problems and interests of these different branches of the rubber industry are so closely interwoven that whatever concerns one of them concerns them all. Thus THE INDIA RUBBER WORLD must and does serve the entire rubber trade.

Progressive rubber goods dealers everywhere read THE INDIA RUBBER WORLD regularly not only because it keeps them in touch with what all the leading rubber manufacturers are producing and how they are doing it, but because it keeps their fingers constantly on the pulse of the rubber industry as a whole.

Time was when an average retailer who knew the goods he was selling and the territory in which he was selling them was fully equipped. Not so today. Conditions change and news now travels so rapidly that merchandising ability now necessitates extensive knowledge, broad vision and a keen "nose for news."

Alert retailers today know competing lines and sales methods almost as well as their own. They try to be first in their territory with new goods of value. They study the trend of business and the statistics of the trade. They watch for trade opportunities in their fields as disclosed by the news. They follow the raw material markets in anticipation of price changes on finished products and as a guide to the wisdom of increasing or depleting stocks.

All these facts are chronicled monthly in THE INDIA RUBBER WORLD, which explains why rubber goods dealers throughout the United States and the leaders abroad are reading it more generally and thoroughly than ever before. It follows, therefore, that the advertising pages of THE INDIA RUBBER WORLD provide the cheapest means by which a rubber goods manufacturer can keep his line constantly before the retail trade. The volume of such advertising which the paper has always carried clearly indicates its value measured in results.

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Single and Double Texture for Automobile Tops, Raincoats, Etc.

Centrally Located for Middle West Shipments

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BOSTON BELTING COMPANY
ORIGINAL
MANUFACTURERS OF
MECHANICAL RUBBER GOODS
Established 1828
TRADE MARK
BOSTON, MASS.

HODGMAN PRODUCTS
IN ADDITION TO OUR WELL KNOWN LINES OF
Clothing—Coated Fabrics—Druggists Sundries—Rubber Bands, Etc.
WE ARE NOW THE MANUFACTURERS OF THE FAMOUS
PARAMOUNT PRODUCTIONS
CONSISTING OF
TOYS TOY BALLS PLAY BALLS
HODGMAN RUBBER COMPANY
General Offices and Factories
TUCKAHOE, NEW YORK
ESTABLISHED 1838
PARAMOUNT PRODUCTIONS

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LOW GRAVITY. HIGH RESILIENCY.

A Quality for Every Requirement

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Stands for the best in quality and workmanship
It implies progress and constant striving after improvement
It fully describes the product of

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Boston Woven Hose and Rubber Company

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MATTING, TAPE, JAR RINGS, TUBING
MOTOR FABRICS - - - AND BRASS HOSE FITTINGS

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BRANCH OFFICES: BOSTON, NEW YORK, PHILADELPHIA, PITTSBURGH,
SAN FRANCISCO, LOS ANGELES, SEATTLE, PORTLAND, EL PASO

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Losant Hose — For Air, Steam, Water
Norka Red Sheet Packing

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TRANSMISSION
OIL WELL

HOSE

FIRE PNEUMATIC
STEAM SUCTION
WATER

MOLDED GARDEN HOSE

RUBBER MATS AND MATTING
DREDGING SLEEVES
RUBBER FLOOR TILING
SHEET PACKING
RUBBER BANDS

EMPIRE TIRE & RUBBER CORPORATION

OF NEW JERSEY

Factories: TRENTON, NEW JERSEY

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Devine Vacuum Chamber Dryers insure

absolutely uniform drying at low temperatures and away from contact with the air, thus eliminating the danger of inferior products due to incomplete drying, overheating and oxidation. Reduced handling and fuel costs, as well as factory space and time saved, are added advantages.

Send for Bulletin 101-A

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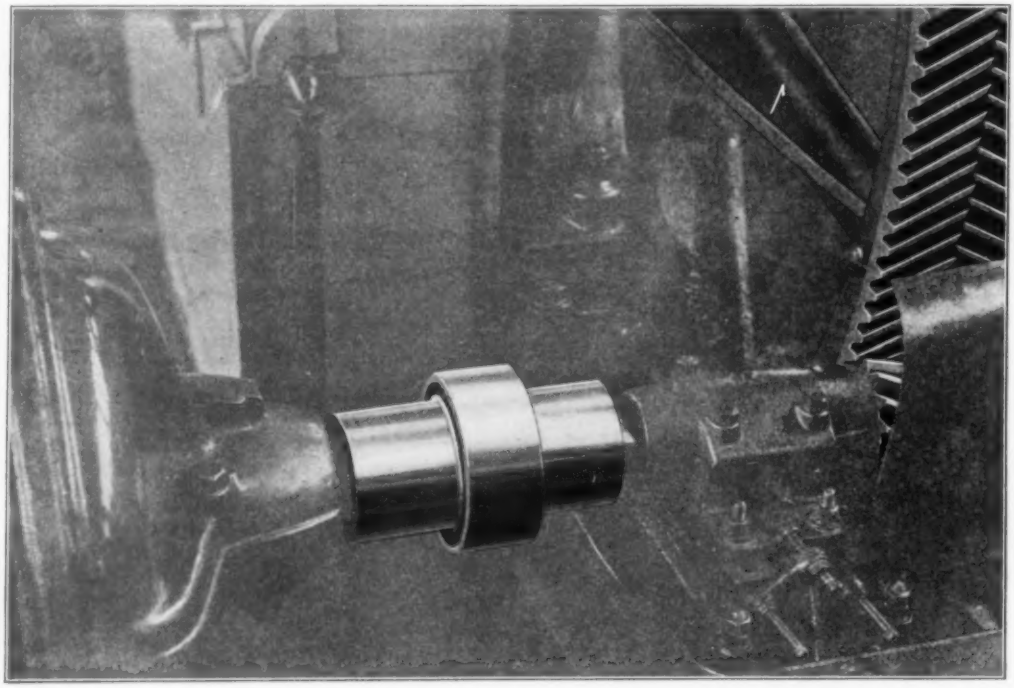
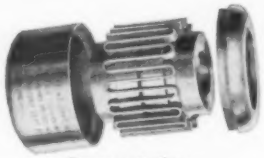
1366 Clinton St. Buffalo, N. Y.

50 E. 42nd Street, New York City
Jas. Livingston, Ltd., London, England.

DEVINE





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M. P. Fillingham,
50 Church St., New York City
Vulcan Iron Works,
Wilkes-Barre, Pa.
Ceneral Machinery Co.,
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E. C. Myers,
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Montreal, Quebec, Canada

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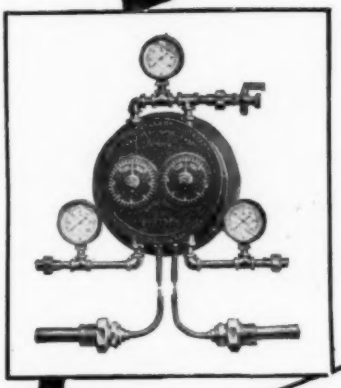
Countless machine and motor troubles are due to shafts that are out of line. Falk-Bibby Couplings correct the evil effects of misalignments of installation and operation.

Vibration and shocks are absorbed. End thrusts are prevented. Shafts are quickly uncoupled by unskilled labor. Send for complete description of these ALL-STEEL couplings. Made by the manufacturers of the famous Falk Herringbone Gears. The same high degree of quality and service assured.

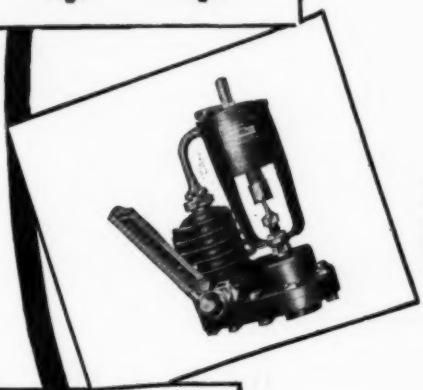
THE FALK CORPORATION
Milwuakee

FALK
BIBBY COUPLINGS

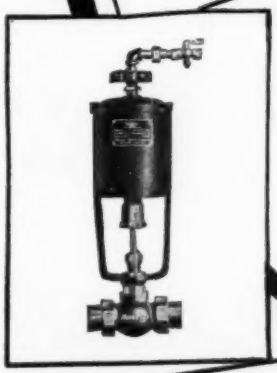
Honeco Temperature and Pressure Controllers



Honeco Twin-System Temperature Controller No. 10100



Honeco Thermo-Steam Trap No. 11650



Honeco Standard Airless Pressure Controller No. 12000

Honeco Air Operated Direct Connected Pressure Controller No. 9500

IN the Honeco Line you will find embodied the most modern and practical principles of automatic temperature and pressure control.

There is a Honeco Controller for every Rubber need. Accurate, rugged and reliable.

Our complete engineering and manufacturing facilities, and our extensive force of sales engineers enables us to offer you a service that we are sure will strongly appeal to you.

We are prepared to prescribe for your needs and guarantee the desired results.

Our Catalog R-18 is yours for the asking.

Now made by ~

American Schaeffer & Budenberg Corporation

Succeeding
THE SCHAEFFER & BUDENBERG MFG. CO.
AMERICAN STEAM GAUGE AND VALVE MFG. CO.
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Also makers of Recording Gauges and Thermometers, Pop Safety and Relief Valves, Steam Traps, etc.

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Manufacturers of

Whiting English Cliffstone Paris White

From Selected Imported English Chalk and Cliffstone
When Buying Whiting Do Not Fail to Specify

SOUTHWARK BRAND

Guaranteed Not to Contain Adulterations
Quality and Service Unexcelled

Established 1880

SOUTHWARK MANUFACTURING CO. CAMDEN, N. J.

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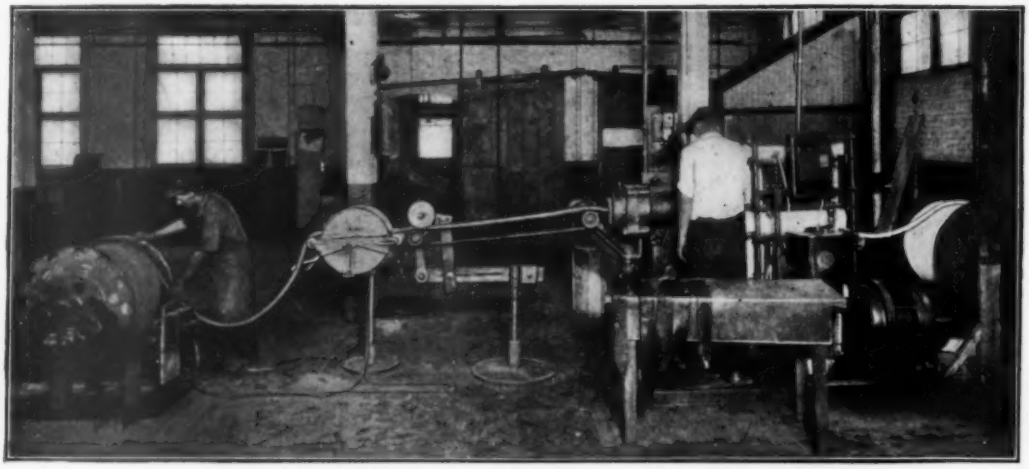

Automatic Hose Reel, Soapstoner and Apron

A New Hose Making Machine Which Speeds Up Production and Saves Labor.
Garden Hose Is Tubed, Soapstoned and Reeled Automatically with Only TWO OPERATORS.
Your Labor Cost Is More Than Cut in Half As Five Men Are Generally Required for This Work.

Let us send details of this and our many other Labor Saving Devices

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Importers of

CRUDE RUBBER

WASHED AND DRIED PARA GRADES,
PREPARED IN BRAZIL AND IN U. S. A.

J. E. ODELL
200 Devonshire Street
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Western Representative
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Regular and Special Constructions of

COTTON FABRICS

Single Filling Double Filling and

ARMY

Ducks

HOSE and BELTING

Ducks

Drills

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Quick Opening Vulcanizer Doors
Unequaled in quality
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Lathes—Wrapping
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Tubers & Strainers
Your troubles eliminated

Refiners—Crackers
Universal Service
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Belt Presses
Electric Presses
Reduction Gears & Drives

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Our Service Unexcelled
Rimming Presses
Knives—Calender—Skiver
Internationally Known
Newest Designs
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Calenders
Hyd. Presses
Inner Tube Skivers
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Engineering Service
Rag Rollers
Your Inquiries Solicited

AKRON OFFICE: 603 Flatiron Bldg.

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"When you install VAUGHN mills and calenders you have a right to expect LOW MAINTENANCE COSTS"

THE VAUGHN MACHINERY CO.
Engineers and Manufacturers
CUYAHOGA FALLS, - - OHIO

MACHINERY

TIRE FABRICS

OF EVERY DESCRIPTION

TAYLOR, ARMITAGE & EAGLES, Inc.

Selling Agent

AMERICAN COTTON FABRIC CORPORATION

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SEA ISLANDS EGYPTIANS PEELERS

FABRICS TO SPECIFICATION

MECHANICAL FABRIC CO.

PROVIDENCE, R. I.

Manufacturers of

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for Weaving and other uses

Card Cloths
of Woolen, Cotton and Rubber

Rubber Coated Cloths
Vulcanized or Unvulcanized for various purposes
CORRESPONDENCE SOLICITED

ESTABLISHED 1853

EASTHAMPTON RUBBER THREAD CO.

EASTHAMPTON, MASS.

Original Makers of RUBBER THREAD in America
Also Makers of RUBBER BANDS
Both THREAD and BANDS are made only of the best UPRIVER FINE PARA RUBBER

American Hard Rubber Company N.Y.

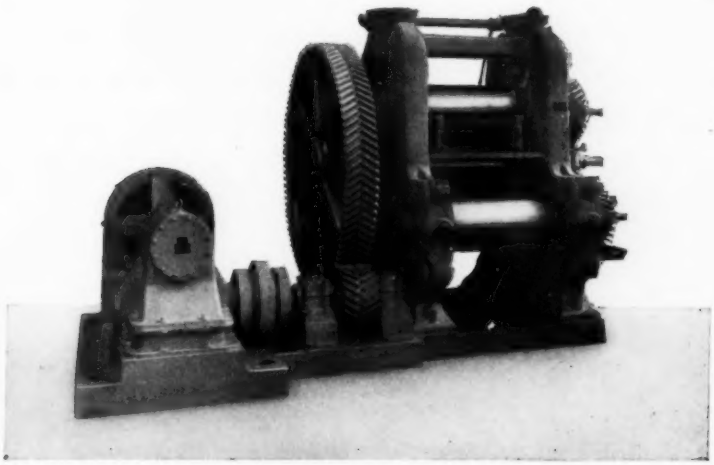
MANUFACTURERS of HARD RUBBER ARTICLES of EVERY DESCRIPTION

REG. U.S. PAT. OFF.

EXECUTIVE AND GENERAL SALES OFFICES:

11 Mercer Street, New York, N.Y.

FARREL
REG U S PAT. OFF.



Four-roll Tread Calender with Worm Drive

Farrel Equipment is designed for every purpose of Rubber Mill operation. Tell us what work you want to do and we will send a detailed description of the necessary equipment.

Farrel Foundry & Machine Co.

Established 1848

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75 Fremont St., San Francisco, Cal.
916 Little Bldg., Boston, Mass.
218 East 3d St., Los Angeles, Cal.

Branch Plant

Buffalo, N. Y.

Established 1874

DAVOL RUBBER COMPANY

Offices and Plant

Providence, R. I., U. S. A.

DAVOL QUALITY SERVICE RUBBER GOODS

MANUFACTURERS OF

HIGH GRADE RUBBER GOODS FOR THE DRUG, MEDICAL, HOSPITAL, SURGICAL, HOME, OFFICE, STATIONER AND DENTAL TRADES

Special Goods Made to Order

Both Molded and Hand Made

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SAN FRANCISCO

Cable Address:
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WESTERN UNION CODE

Time to Re-tire?
Buy
FISK

There's a Fisk Tire of extra value for every car, truck or speed wagon.

Fisk branches in 130 cities fill your order over night regardless of where you are located.

CIRCULAR MANDRELS FOR BALLOON TRUCK and REGULAR CORD INNER TUBES

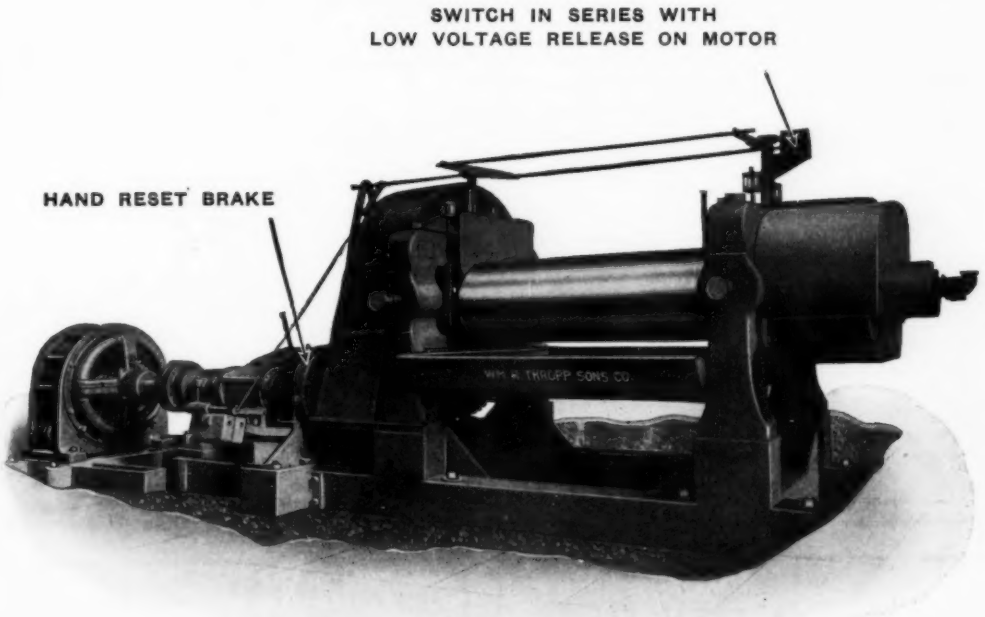
PROMPT DELIVERY ALL SIZES

Manufactured by

THE CLYDE E. LOWE COMPANY
CLEVELAND OHIO

THE NEW HAVEN SHERARDIZING COMPANY
Hartford, :-: *Distributors* :-: Conn.

MANUFACTURERS OF RUBBER MILL MACHINERY



20" and 22" x 60" INDIVIDUAL MOTOR DRIVEN GRINDER OR MIXER

Driven by a 100 horse-power Motor, 720 r. p. m., with a flexible coupling between the motor and drive. Gear drive is the herringbone type; pinion is forged steel and cut on shaft, reduction gear is of open hearth steel, cut. Top cap frames with steel gibs. All iron automatic adjustable guides; oil cups at the top of frames with pipes passing through same to lubricate the bearings. Equipped with all our "Safety First" equipment. Pan under the small connecting gears, and steel guard over same, with end shield and thimbles over stuffing boxes to contain oil and for protecting gears for safety. Master Gear enclosed in wire mesh guard.

One of the most important features of the machine is our safety stop for stopping the rolls in case of accident to the operator. The machine is equipped with overhead levers, and bars that can be operated in either direction—"up or down," from either side by some portion of the operator's body if both hands are caught between the rolls; this operates a small switch that is in series with low voltage release on motor, cutting the current off motor and at the same time operating a hand re-set brake that stops the momentum of the machine—(patent applied for). The bedplate of the machine contains the machine, drive and motor,—one unit, and on the same foundation line, making it easy to set up, and a more substantial and solid machine.

WILLIAM R. THROPP SONS' CO. Trenton, N.J., U.S.A.

aerfloted
ARROW BLACK

The only carbon black refined by air classification

J. M. HUBER, INC.
MANUFACTURERS

FACTORIES:
Swartz, Louisiana, and Breckenridge, Texas

Stocks carried at Baltimore, Boston, Chicago, Cincinnati, Cleveland, Los Angeles, Philadelphia, St. Louis, Toronto, London, Paris, Hamburg.

MAIN OFFICE:
130 West 42nd Street
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RECLAIMED RUBBER
THAT HAS STOOD
THE TEST FOR YEARS

Special GRADES for the following TRADES

INSULATED WIRE
BOOT AND SHOE
MECHANICAL—AUTO TIRE
PROOFING
HARD RUBBER

We will cheerfully furnish samples upon request

SOMERSET RUBBER RECLAIMING WORKS
NEW BRUNSWICK, N. J.
Factory—East Millstone, N. J., Somerset County

FACTORS
Rubber Workers' Supplies

Headquarters for

Gums, Asphalts, Pitches, Waxes, Earths, Clays, Fillers, Dry Colors, Chloride of Sulphur, Rubber Substitutes, Lime Products for absorbing moisture, Bisulphide of Carbon, Mineral Rubber or Hydro Carbon, Cantella Gum, a rubber gum, etc.

LITHOPONE OXIDE OF ZINC
GOLDEN AND CRIMSON ANTIMONY

WILLIAM H. SCHEEL
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Reclaimed Rubber

For All Purposes

QUALITY

VALUE

SERVICE

RUBBER REGENERATING COMPANY

Largest Reclaimers in the World

(FOUR FACTORIES)

Naugatuck, Conn.

MISHAWAKA, IND. MONTREAL, CAN. MANCHESTER, ENG.

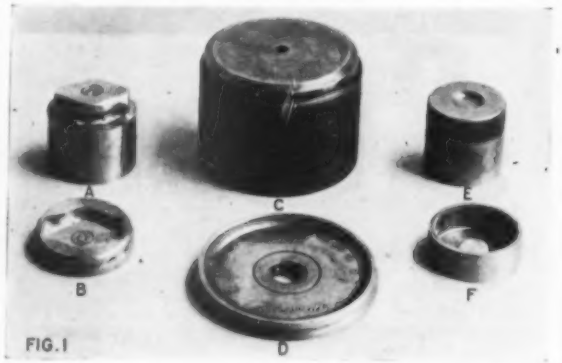


FIG. 1

Duplicate mold impressions made by Hobbing.

We can furnish impressions or the hydraulic equipment for making them.

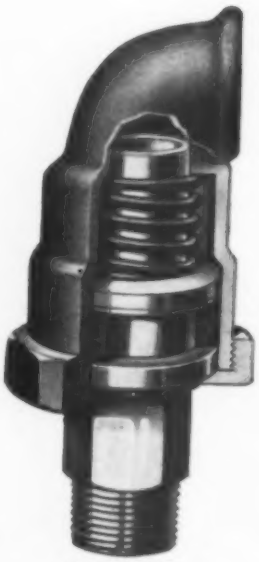
We Specialize in Equipments for
Moulding Compositions

The Burroughs Company

ESTABLISHED 1869

246 North Tenth St. Newark, N. J.

BUILDERS OF HYDRAULIC MACHINERY FOR ALL PURPOSES



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The Original Joint That Solved the Flexible Connection Problem.

Thousands in Use by Satisfied Customers

CURRIER-LOOMIS CO.

39 Cortlandt St. New York, N. Y.

MEASURE RUBBER THICKNESS WITH PERKINS MICROMETER DIAL GAUGES

The new gauge shown herewith fills the demand for a larger instrument of more rugged construction than hitherto available.

Easily read to one-quarter of one one-thousandth of an inch.

Built for years of hard and constant service.

Perkins Pocket Thickness Gauge

has the precision and accuracy of the larger Perkins Gauges, and yet can be carried in the pocket together with the case.

Perkins Combination Thickness Gauge

Mounted for use as a desk instrument, or can be used as a hand gauge.

PERKINS HOLYOKE

Write Dept. W for FULL Information

B. F. PERKINS & SON, INC., Holyoke, Mass.

Trade Mark

United States Rubber Company

MAIN OFFICE:

1790 Broadway, New York

❖

Fifty-Three Factories
Branches in all Principal Cities

❖

Manufacturers of All Classes of Rubber Goods, including—

"U. S." ROYAL CORD TIRES USCO CORD AND FABRIC TIRES
"U. S." ROYAL CORD TRUCK-BUS TIRES
MONO-TWIN, CUSHION, HIGH SIZE, AND UNIVERSAL SOLID TRUCK TIRES
"U. S." ROYAL TUBES, GREY TUBES AND "U. S." TIRE ACCESSORIES
"U. S." BICYCLE TIRES
"U. S." TRAXION TREAD MOTORCYCLE TIRES AND TUBES
"U. S." SPRING-STEP RUBBER HEELS USKIDE SOLES
"U. S." RUBBER FOOTWEAR KEDS SNUG-LER FELT FOOTWEAR
RAYNSTER RAINCOATS BELTING—PACKING—HOSE HARD RUBBER PRODUCTS
"U. S." TILE FLOORING USCO SHEET FLOORING NAUGAHYDE LUGGAGE
"U. S." ROYAL GOLF BALLS "U. S." DRUGGIST SUNDRIES
"U. S." PARACORE INSULATED WIRE AND CABLE
"U. S." BATHING APPAREL

❖

United States Rubber Export Co., Ltd.

Exporters of the Products of

The United States Rubber Co., System
AND
The Canadian Consolidated Rubber Co., System

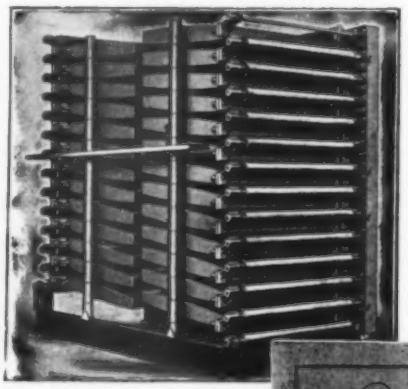
MAIN OFFICE:

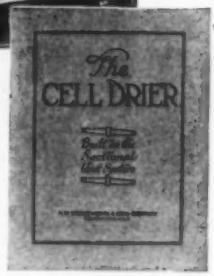
1790 Broadway, New York, U. S. A.

Branches and Distributing Agencies in all Principal Cities of the World

Butterworth Cell Driers

utilize all the heated surface





This is but one feature of Butterworth Cell Driers. Another is the constant, even temperature you are able to maintain. Then there is the gravity circulating system—water **cannot** collect. Important also is the compactness of the Butterworth Cell Drier. Built cell upon cell it occupies a minimum of floor space. If you are interested we will be glad to send you a booklet on the Cell Drier.

FINISHING Butterworth MACHINERY

Butterworth Products

Ageing Machines	Mercerizing Ranges	Mangles (all kinds)
Bleaching Machines	Hydraulic Presses	Calenders (all kinds)
Drying Machines	Dyeing Machines	Color Kettles
Singeing Machines	Soaping Machines	Cell Driers
	Tentering Machines	

H.W. Butterworth & Sons Co.

Established 1820

PHILADELPHIA

Providence Office
Turk's Head Building

Canadian Representative
W. J. WESTAWAY CO.
Hamilton, Ontario, Canada

Southern Office
Greenville, S. C.
Woodside Building

H T&G

H T&G

GOLDEN CRIMSON VERMILION

ANTIMONY SULPHURET

15%-17% FREE SULPHUR

THE HARSHAW FULLER AND GOODWIN CO.

Cleveland, Ohio

New York Philadelphia Chicago

H T&G H T&G

ISOPRENE Lynpro TRADE MARK C5H8 C5H8 ISOPRENE

LIQUID RUBBER

can now be obtained at the price of its substitutes.

Ot greatest assistance in eliminating difficulties in milling operations, this super-flux will prevent bloom, make stocks "tacky" and cause the compound to flow smoothly on the mill without weakening the tensile strength.

THE SYNTHETIC PRODUCTS CO.

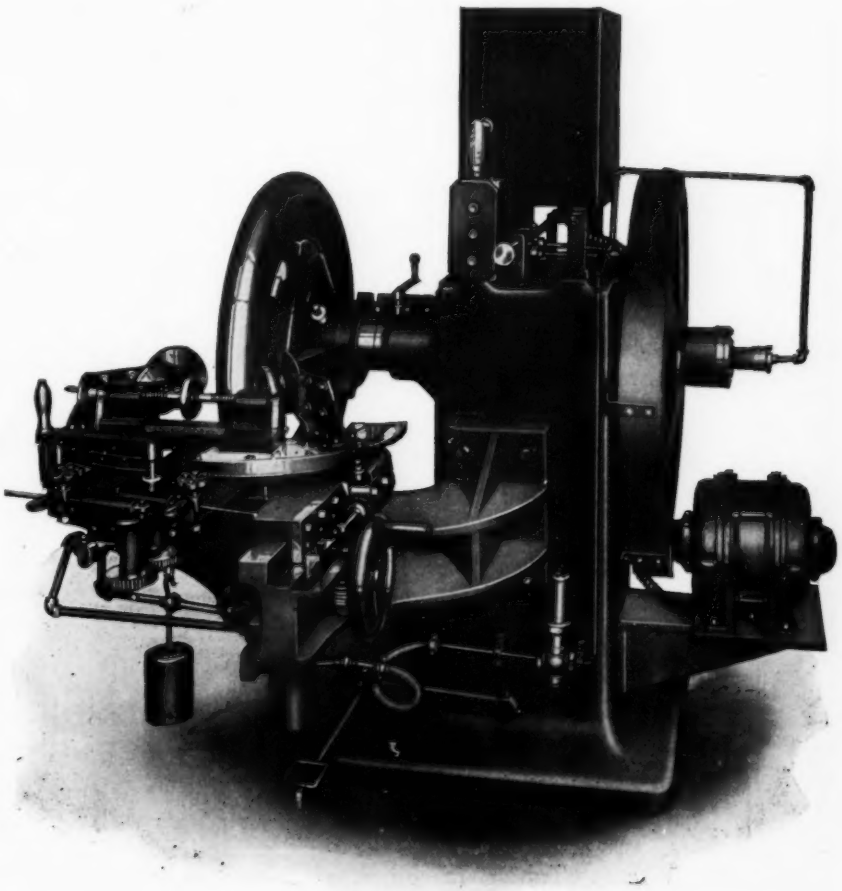
Sole Manufacturers

Merwin & Center Sts. Cleveland, O.

Thropp Improved Cord Tire-Making Machine

A few reasons why this machine should be in your factory

It eliminates hand work by mechanically stitching down the fabric on both sides of the core in one operation. Small floor space. Maximum production. Low cost per unit. Mechanically correct (proved by ten years' continuous use.) Over three hundred machines in daily operation.



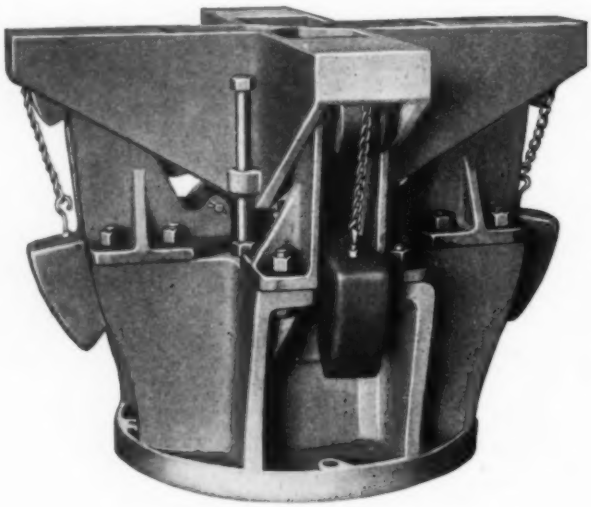
A complete line of molds and tire making equipment

One of our customers advises they were able to produce a 30 x 3½ Clincher 5-ply cord tire finished all complete ready for the curing mold, every five minutes during a continuous eight-hour run, with one machine operator and one finisher.

Why not let us show you how to reduce your tire building costs?

JOHN E. THROPP'S SONS COMPANY

TRENTON, N. J., U. S. A.



Adamson Rimming Press of Superior Merit for CORD and BALLOON TIRES

One man will do more than two on the ordinary type. Proper design, substantial construction, simple operation. Would you care to try one?

We Also Make:

CALENDERS
MILLS
REFINERS, ETC.
PRESSES
ACCUMULATORS
PUMPS
HYDRAULIC EQUIPMENT

Tubing machines, all sizes to 12 inches and many other standard and special machines.

THE ADAMSON MACHINE COMPANY

Engineers, Machinists, Iron and Steel Founders

AKRON, OHIO

RUBBER RECLAIMERS

SINCE 1868

Still Supreme in Quality and Service

E. H. CLAPP RUBBER COMPANY

BOSTON, MASSACHUSETTS

Boston: H. P. FULLER

Akron: J. A. KENDALL

1868

Knowing how—from Experience

Cleveland
WORM GEAR
REDUCTION UNITS

There is a Cleveland representative near you who will be pleased to assist you in your speed reduction problems.

The Cleveland Organization today is the organization which brought Cleveland Worm Gear Reduction Units to their present state of efficiency. The result of twelve years of pioneering experience is reflected in the superiority of our product.

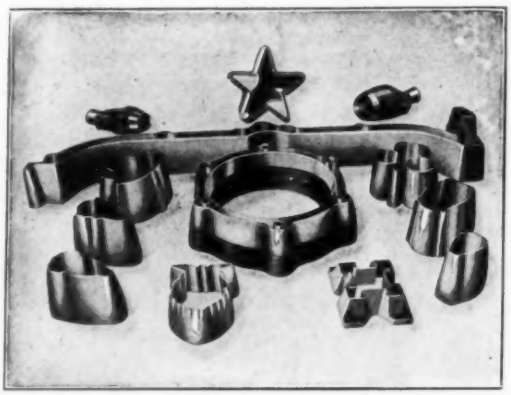
In the last 5 years alone over 3000 Cleveland Worm Gear Speed Reducers have been sold in the industrial field, going into practically every basic industry in this country. This, in addition to the countless thousands that are serving the automotive industry today, represents a wealth of practical data and knowledge that cannot be obtained otherwise. This information is yours for the asking.

The Cleveland Worm & Gear Co.
America's Pioneers in Worm Gearing
Payne Avenue and 40th CLEVELAND, OHIO

STEEL CUTTING DIES *for all kinds of Rubber Mechanical Goods*

Cutting Dies of Quality

Properly Constructed



Let us make that next Die for you. It matters not how difficult or intricate, we can make it. ¶A trial order will convince you of our service and quality.

THE HOGGSON & PETTIS MFG. CO., New Haven, Conn., U.S.A.

THE CLEVELAND LINER & MFG. CO. CLEVELAND, O.
BLUE
PROCESSED
LINER
PATENTS PENDING
PROCESSED UNDER LICENSE - THE B. F. GOODRICH CO.

BLUE PROCESSED LINERS

PREVENT

OXIDATION

MOULD AND BLOOM

THE CLEVELAND LINER & MFG. CO.
5508 MAURICE AVE.
CLEVELAND, OHIO

CABARRUS COTTON MILLS

M. L. CANNON
PRESIDENT & TREASURER
KANNAPOLIS, N. C.

Superior Quality Tire Fabrics

EGYPTIAN-PEELER KARDED & COMBED
CORD & SQUARE WOVEN

CANNON MILLS, Inc.

Selling Agents

NEW YORK
55 Worth Street

CHICAGO
327 S. La Salle Street
A. W. REID
Representative

Our upwards of thirty-five years of practical, constructive manufacturing experience are at your service.

IF

N. B. O.

the

Original Black Sheet

were our only achievement of note during the time we might feel satisfied, but all our lines of Sheet and Rod Packings, Hose, Belting, Matting, Tubing, Pump Valves, etc., are as firmly established in reputation as the best and most dependable.

We have long since earned the reputation as being EXPERTS in the mechanical line.

HOME RUBBER CO.

Factories: Trenton, N. J.

NEW YORK CHICAGO PITTSBURGH LONDON

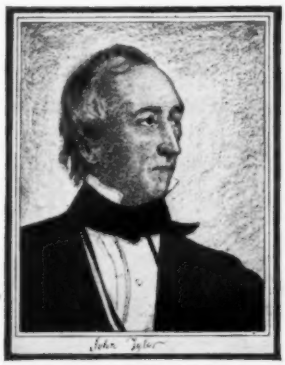
Citizens of New York greet President Tyler and his bride. The horse-drawn barouche, the quaint costumes and the rustic appearance of the city offer a striking contrast to the automobiles, the dress modes and the skyscrapers of 1924.

While Tyler rode through New York streets in 1844

THE wheels of the horse-drawn carriage of Tyler were encircled with bands of iron. Yet children who saw Tyler and his bride in 1844 lived to ride comfortably on air confined in pneumatic automobile tires by Schrader Tire Valves.

In this same year, 1844, August Schrader began in New York the manufacture of diving equipment. He started the work of confining air that is being carried on today, in the manufacture of Schrader Tire Valves.

In pneumatic bicycle tires and later in automobile and motorcycle tires, Schrader Tire Valves successfully held air from the first. Today, as in past years, they are standard equipment on pneumatic tires made in the United States and Canada.



John Tyler, tenth President of the United States, 1841-1845. On June 26, 1844, he married Miss Julia Gardiner, of New York City. After the wedding a coach drawn by four white horses bore the bridal pair through the streets of the city to a waiting warship.

Care in manufacture, rigid tests, and inspection of every valve and of all its parts insure the production of tire valves that hold air.

Use Schrader Tire Valves and Valve Parts on all pneumatic tires.

Manufacturers and supply houses can always rely on prompt shipment from our large stocks.

This is the standard Schrader Tire Valve. Complete with all its parts.

Be sure it's a Schrader—buyers look for the name

A. SCHRADER'S SON, Inc., Brooklyn, N. Y.
Chicago Toronto London

Schrader

Makers of Pneumatic Valves Since 1844

Tire Valves · Tire Gauges

APPLETON RUBBER COMPANY

Main Office and Factory :-: FRANKLIN, MASS.

MANUFACTURERS OF **RECLAIMED RUBBER**

Acushnet Process Company

New Bedford, Massachusetts

WE market high grade friction reclaimed, and reclaim tire frictions for the trade

HARD RUBBER

WE CAN SATISFY YOU ON THE DIFFICULT GOODS

—ALSO.—

GIVE US A TRIAL WE CAN PROVE IT

JOS. STOKES RUBBER CO.

TRENTON N. J.

Canadian Factory Welland, Ontario

THE MINER RUBBER CO., LIMITED

FACTORY GRANBY, QUE., CANADA

MANUFACTURERS OF ALL KINDS OF

RUBBER FOOTWEAR

BRANCHES ALL OVER CANADA

MINER RUBBERS

MINER'S INVINCIBLE

MAXIMUM PRODUCTION
and a BETTER PRODUCT
is obtained wherever
SOUTHWARK
HYDRAULIC STEAM PLATEN PRESSES
WITH ROLLED STEEL PLATENS ARE USED—

Because,

They save time by reason of quicker heating and chilling.

Save steam as the radiation is greatly reduced due to the smaller area of the platen edges.

Save space and increase the capacity of the press, as the rolled steel platens on most presses occupy only one-half the space required for cast platens.

The steel platens are practically indestructible. Their hard glasslike surface does not pit or crack and makes a more uniform and better product.

Rolled steel platens are lighter and at the same time much stronger. Leaks or danger from explosion are eliminated.

Presses now using cast iron platens can be easily fitted with steel plates, increasing their capacity as much as 50%.

Steam Platen Press
All Types, Sizes and Capacities

These are reasons why
SOUTHWARK PRESSES are specified
by the largest manufacturers

Read what the superintendent of one of the largest rubber sole and heel plants says about Southwark Presses.

"We have had these presses now in operation for eight months without having one minute's trouble with them. Working 24 hours a day, this certainly speaks well for the machines. We are never held up on production."
Name of this plant will be furnished on request.

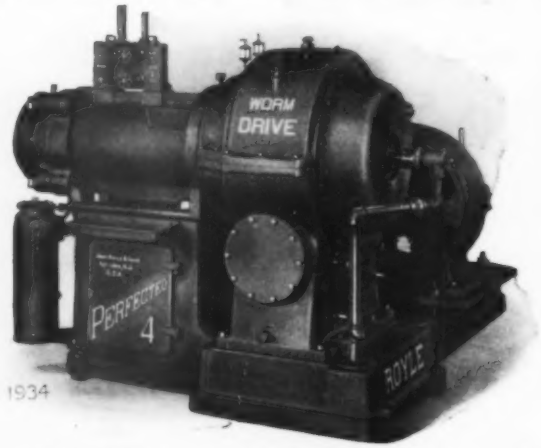
The presses referred to above are 32″ x 40″ four-opening rolled steel platens, having an improved ram packing and a new design in slip joint steam connections.

CHICAGO
FISHER BLDG.

SOUTHWARK
FOUNDRY AND MACHINE CO.
ESTABLISHED 1836
PHILADELPHIA, PA.

CLEVELAND
SWETLAND BLDG.

Every Essential Requirement



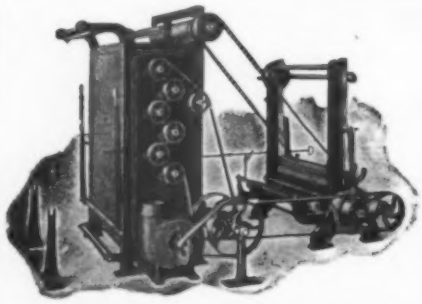
of a profitable tubing and insulating machine is found in the Royle Perfected.

With a thrust bearing that adequately absorbs the thrust from the stock worm, perfect control of temperature on cylinder, head and stock worm, a worm drive of unusually quiet, smooth running, and interchangeable head fixtures, the Royle Perfected is exceptionally equipped for satisfactory returns.

Ask for Catalog 213.

JOHN ROYLE & SONS, PATERSON, N. J.

Tubing Machines (six sizes), Insulating Machines (three types), Circular Looms



HEATH PATENT VERTICAL BRUSHES
With Calender Rolling Machine

CURTIS & MARBLE MACHINE CO.

WORCESTER, MASSACHUSETTS

Brushing Machines, for cleaning goods to be coated; for brushing coated goods in connection with starch; or for cleaning cotton liners of soapstone, talc, etc.; Starching Attachments; Mill Sewing Machines, for stitching the ends of pieces together; Measuring Rolls and Dials; Rolling Machines; Inspecting Machines; Guide Frames; Machine Brushes of all kinds, etc.

The building of textile machinery for handling all varieties of cotton and other fabrics is our specialty.

European Rubber Manufacturers

Send Your Enquiries for

AMERICAN AND EUROPEAN

RUBBER SCRAP

Also Reclaimed Rubber to

J. SCHNURMANN

Downham Mills, Tottenham, London N 17

Telegrams—Reclaiming, London

American Rubber Manufacturers and *Reclaimers*

Send Your Enquiries for

AMERICAN AND EUROPEAN

RUBBER SCRAP

TO

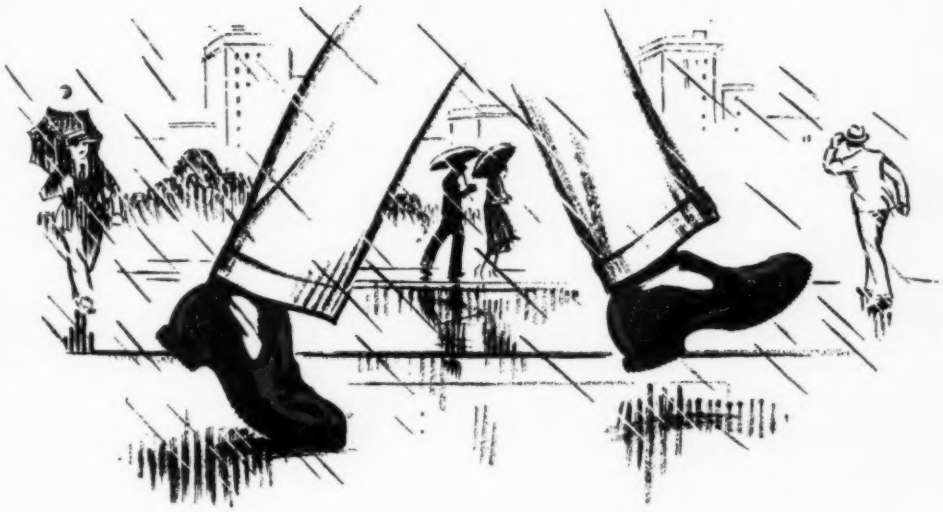
HERMANN WEBER

Representing

J. SCHNURMANN

Newark & Jackson Sts., Hoboken, N. J.

ALL GOODS SORTED TO CONSUMERS' REQUIREMENTS



Under the Varnish

IN the rush and scuffle of hurrying feet the tender film of varnish is soon destroyed—often exposing the greyish hue of the underlying vamp.

Not so—however—if to the compound there has been imparted the dense, jet, permanent black beauty of

MICRONEX

Reg. U.S. Pat. Off.

The King of Rubber Pigments

Full details from

Binney & Smith Co

41 E. 42nd Street-New York City

Agents with stocks located in Cleveland, Akron, Cincinnati, Chicago, San Francisco, Los Angeles, Toronto and Montreal

TYPKE & KING, Ltd.

Look for the seal

T&K

None genuine without it

Crown Chemical Works
Mitcham Common, England
SINCE 1883

Look for the seal

CROWN CHEMICAL WORKS · MITCHAM COMMON · TYPKE & KING LTD

None genuine without it

GOLDEN and CRIMSON
ANTIMONIES
Standards unexcelled for uniformity, also

Pure Pentasulphide of Antimony
Contains 16% Free Sulphur, absolutely nothing finer produced

RUBBER SUBSTITUTES
WHITE BROWN BLACK

For discriminating buyers.

Stocks Carried by our Agents

239 FRONT STREET **L. H. BUTCHER COMPANY, Inc.** NEW YORK CITY

Sole Canadian Agents: MESSRS. E. A. SCHOFIELD & CO., St. Nicholas Building, Montreal.
Bank of Hamilton Buildings, Toronto — Stocks held in Montreal and Toronto.

Genasco
MINERAL RUBBER

A hard, natural hydrocarbon.

Produced under the strict supervision of an experienced and up-to-date laboratory.

Of uniform quality.

Aging tests unequalled.

Will not oxidize as do cheaper grades of mineral rubber.

Shipped to all parts of the world in metal drums.

Stocks carried at Maurer, N. J., Madison, Ill., and by Union Chemical Company, Boston, Mass.

THE BARBER ASPHALT COMPANY

New York PHILADELPHIA Chicago
Pittsburgh St. Louis Kansas City San Francisco

Producer of Gilsonite, Trinidad and Bermudez Lake Asphalts, and Asphaltic Products

Cable address, BASPACO—Philadelphia

DIXIE
GAS CARBON BLACK
FOR RUBBER MANUFACTURERS

UNITED OIL & NATURAL GAS PRODUCTS CORPORATION · TRADE DIXIE MARK · BRAND · MONROE, LA.

Manufactured by the Largest Single Carbon Producer in the World

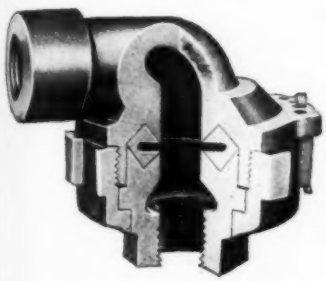
UNITED OIL & NATURAL GAS PRODUCTS CORP.

General Sales Office:
30 CHURCH STREET NEW YORK CITY
Works: Cargas, La.

Fisk Rubber Company Endorses

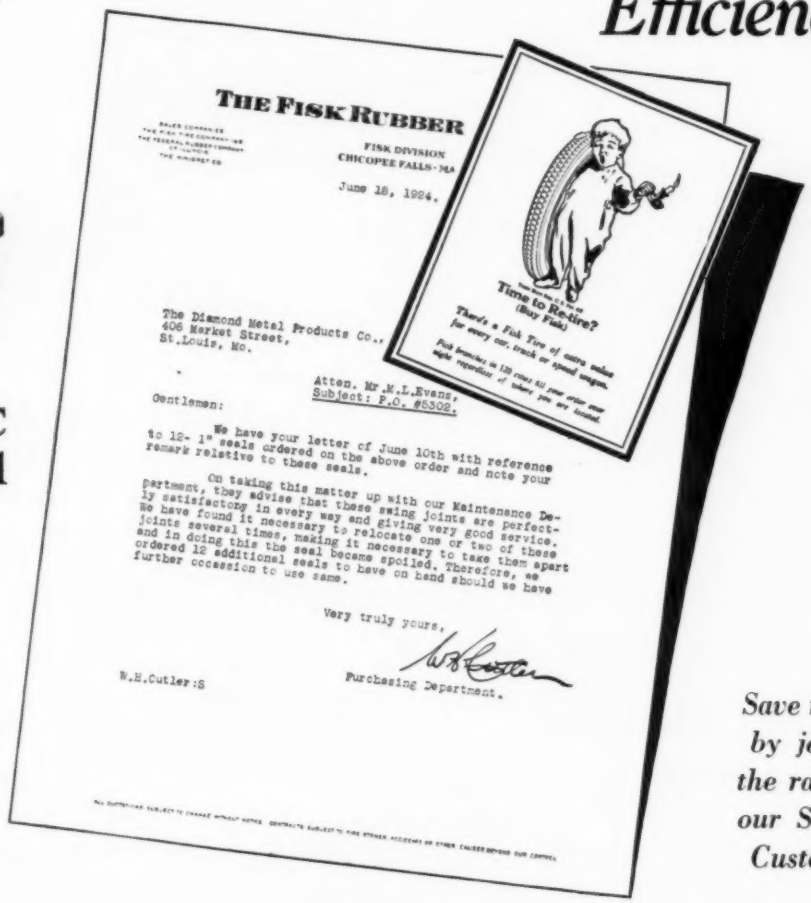
Diamond Swing Joint

Efficiency—



Simple as A-B-C
3 parts and a seal

Always work and never leak


THE FISK RUBBER
FISK DIVISION
CHICOPEE FALLS-MA
June 18, 1924.
The Diamond Metal Products Co.,
406 Market Street,
St.Louis, Mo.
Atten. Mr.M.L.Evans,
Subject: P.O. #5302.
Gentlemen:
We have your letter of June 10th with reference to 12- 1" seals ordered on the above order and note your remark relative to these seals.
On taking this matter up with our Maintenance Department, they advise that these swing joints are perfectly satisfactory in every way and giving very good service. We have found it necessary to relocate one or two of these joints several times, making it necessary to take them apart and in doing this the seal became spoiled. Therefore, we ordered 12 additional seals to have on hand should we have further occasion to use same.
Very truly yours,
W.H.Cutler:S
Purchasing Department.
Time to Re-tire?
(Buy Fisk)

Save money by joining the ranks of our Satisfied Customers

Test them today without expense. Wire for them when you need them. Sizes ½"—¾"—1" shipped from stock.

DIAMOND METAL PRODUCTS COMPANY

406 MARKET STREET, ST. LOUIS, MO.

Akron, Ohio—Ohio Rubber Engineering Co., 174 Annadale Ave.
New York Metropolitan District and New Jersey—Furman Engineering Corporation, 30 Church St., New York City
State of Indiana, also Louisville, Ky.; Cincinnati, Ohio, and Vicinity—Wilson & Tipton, Inc., Indianapolis, Ind.
Sole Agents Pacific Coast—A. L. Studebaker Company, 610 Syndicate Building, Oakland, California
In Canada—Dominion Equipment and Supply Co., Notre Dame Investment Building, Winnipeg

THE
GENERAL
CORD TIRE

—goes a long way to make friends

BUILT IN AKRON, OHIO, BY THE GENERAL TIRE & RUBBER CO.

Crimson Antimony Golden Antimony Aniline Oil

TRIPHENYLGUANIDINE ANILINE SULPHATE
ETHYLIDENE ANILINE CRYLENE

These last two accelerators protected by our Patent No. 1417970

Manufactured by

THE NAUGATUCK CHEMICAL CO.
Established 1904 NAUGATUCK, CONNECTICUT

Hewitt Rubber Company

Manufacturers of High Grade
Mechanical Rubber Goods

Specialists in
Cord Tires Inner Tubes
Fabric Tires

General Offices and Works
BUFFALO
240 Kensington Avenue

NEW YORK
111 Broadway

CHICAGO
431 Railway Exchange Bldg.

The Best Engineers Specify "WESTERN"

WHEN THEY WANT THE BEST **PUMP VALVES** — BECAUSE EVERY VALVE HAS OUR GUARANTEE BACK OF IT. LET US CONSULT WITH YOU WHAT IS BEST FOR YOUR SERVICE.

WESTERN RUBBER COMPANY
GOSHEN, IND.

THE ACCELERATOR

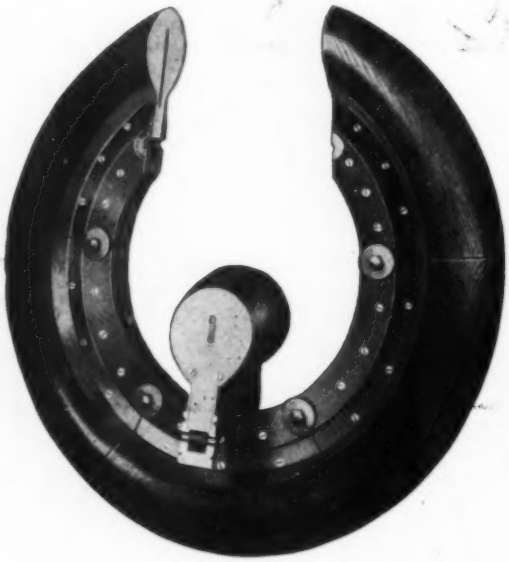
Manufactured and Marketed under U. S. Patent 1467984, dated Sept. 11, 1923, and other patents pending.

The Rubber Service Laboratories Co.

Stocks Carried at
Akron
Chicago
New York
Trenton
Toronto
Montreal

General Offices:—Akron, Ohio
Plant:—Nitro, W. Va.

Dependability



Two Thirds Less Weight

New Improved Wood Core Ideal For Larger Section Tires

Faster and easier handling of the larger section tires follows the use of this new and distinctive wood core.

For it weighs only a third as much as a cast iron core of a similar size.

It has every advantage of a metal core and has features found in no other wood core.

The interior, including the trimming surface, is made of steel. This steel trim line adds greatly to uninterrupted service.

Each section is steel faced and the construction throughout is durable and lasting.

Severe service tests have proved it right in every way and deliveries are now being made rapidly.

The Akron Standard Mold Co.

Akron "The Established Measure of Value" Ohio

Your Satisfaction is Doubly Assured When You Specify RMR

(1) *By the Material Itself*

Robertson Mineral Rubber (RMR) used as an ingredient in your rubber compounds will in and of itself produce many beneficial effects.

For instance, RMR makes a rubber mix easier to work; produces a denser, better-finished mix; prevents blooming and blowouts; increases elasticity, plasticity, tensile strength and recovery values; improves "aging" qualities; shortens the curing process, etc.

And you get these desirable results with each and every shipment of RMR. Your satisfaction is assured by the quality, the uniformity and the performance of the product itself.

(2) *By the Service Behind the Product*

Your satisfaction is made doubly certain by the comprehensive engineering and laboratory service which the H. H. Robertson Company puts behind RMR—a service which is freely available to you before you buy the product and which continues indefinitely as you may need it.

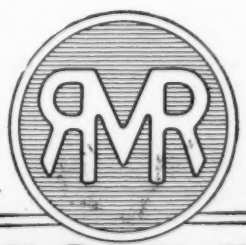
Without obligating you in any way, Robertson Engineers and the Robertson Laboratories will cooperate with you or assume full responsibility for the development of mineral rubber specifications exactly suited to your requirements. And the Robertson Laboratories keep complete specification records of all shipments so that any RMR formula can be exactly and promptly duplicated at any time.

H. H. ROBERTSON COMPANY, Pittsburgh, Pa.

Over 250 Prominent Users

Because of the superiority of Robertson Mineral Rubber and the completeness of Robertson Engineering Service, more than 250 of the most prominent rubber manufacturers now use RMR as standard.

May we help you in securing the best possible adaptation of mineral rubber to your requirements? Our engineers are at your service at all times. Get in touch with us.



Factories and Branches

Factories: Ambridge, Pa.; Sarnia, Ont.

Branch Offices: In all principal cities in the United States. Also London, 110 Fenchurch Street, E. C. 3, England.

For Canada: H. H. Robertson Co., Limited, Sarnia. General Sales Agents for Canada: Garnet Lea, 289-291 Sumach St., Toronto, Ontario, Canada.

ROBERTSON PROCESS

THE MANHATTAN RUBBER MFG. CO.

SOLE MAKERS Condor BELT

Factories, Warehouses and Executive Offices:
PASSAIC, NEW JERSEY

SOLE MAKERS Condor BELT

Manufacturers of

MECHANICAL RUBBER GOODS

BRANCHES:

BALTIMORE, 206 West Pratt St.
BIRMINGHAM, 2017 Fifth Ave., No.
BOSTON, 60 Pearl Street.
CHICAGO, Peoples Gas Bldg., 122 So. Michigan Ave.
CLEVELAND, OHIO, Suite 309, Rockefeller Bldg.
DETROIT, Penobscot Building.
LOS ANGELES, 206 No. Los Angeles St.
MINNEAPOLIS, 424 Washington Ave., No.
NEW ORLEANS, 500 Camp Street.
NEW YORK, Equitable Bldg., 120 Broadway.
PHILADELPHIA, 1318 Arch Street.
PITTSBURGH, Union Arcade Bldg.
PORTLAND, ORE., 68-70 First Street.
SALT LAKE CITY, Walker Bank Bldg.
ST. LOUIS, 411 Olive Street.
SPOKANE, S. 157 Monroe Street.

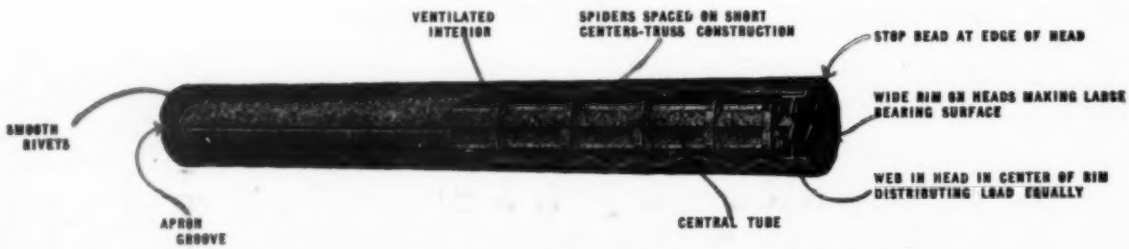
CABLE ADDRESS—MIALOGIA, N. Y.

BROCKTON TOOL COMPANY

103 BELMONT STREET — QUALITY HEEL MOULDS — BROCKTON, MASS.

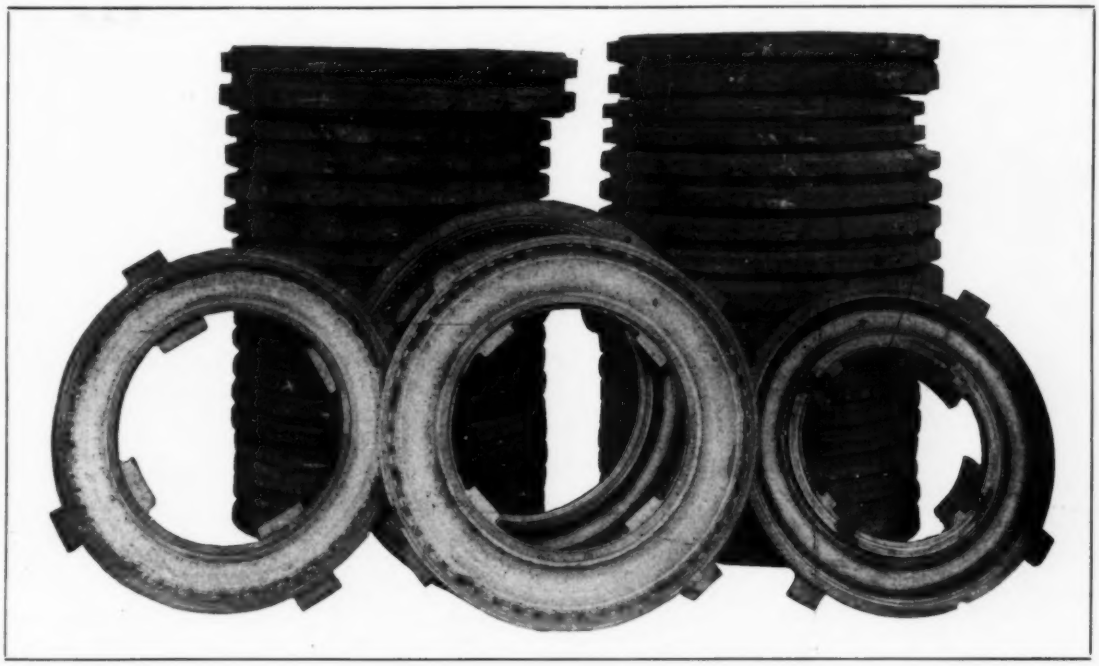
Most Rubber Manufacturers Use Universal Steel Calender Shells

The Illustration Shows Why


VENTILATED INTERIOR
SPIDERS SPACED ON SHORT CENTERS-TRUSS CONSTRUCTION
STOP BEAD AT EDGE OF HEAD
WIDE RIM ON HEADS MAKING LARGE BEARING SURFACE
SMOOTH RIVETS
WEB IN HEAD IN CENTER OF RIM DISTRIBUTING LOAD EQUALLY
APRON GROOVE
CENTRAL TUBE

THE W. F. GAMMETER COMPANY

CADIZ, OHIO



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WITHOUT experienced management and skilled workmanship no machine shop, however well equipped, can succeed. The knowledge of our executives combines a progressive outlook with an experience dating back to the pioneer days of the tire industry and embracing the standpoint of the tire maker as well as of the machinist. The ability of our trained mechanics is second to none in skill and painstaking. We are in every sense specialists in tire building equipment.

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Our non-skid tire designs are carefully cut and nicely finished. Our templates, insuring tire equipment uniformity, are exact to within .001 inch. We can guarantee satisfactory work, efficient service, fair prices, prompt deliveries and respected confidences.

Estimates promptly furnished. Confidences strictly respected.

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FINE MAROON and BRIGHT REDS
BONE BLACKS :: YELLOW OXIDE

JOSEPH A. McNULTY

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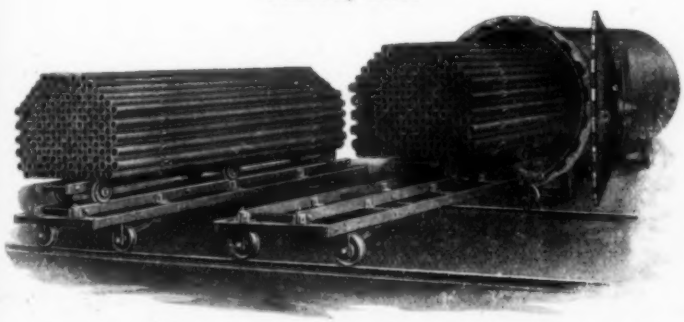
When You Think of Vulcanizers, Think of Biggs

GOOD cures, and lots of them, that is the universal record of Biggs Vulcanizers with quick-opening doors.

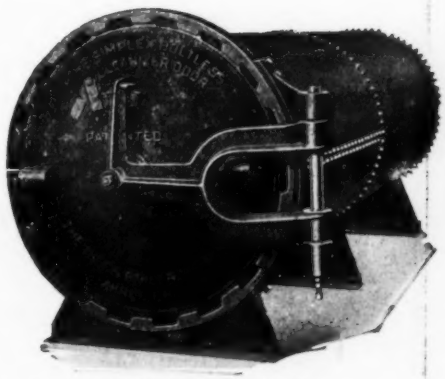
We say universal record advisedly, for the list of users of Biggs Vulcanizers is practically a list of the great names of the industry. And these old customers are repeat buyers when they need additional equipment, the one sure evidence of satisfaction.

We furnish either Simplex or Adamson quick-opening doors, and we are prepared by our unusual experience and facilities to meet any special conditions in connection with installation of vulcanizer equipment.

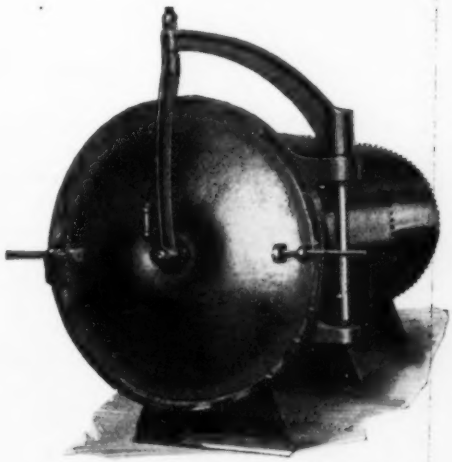
The Biggs Boiler Works Company
Case Ave. and B. & O. R.R.
Akron, Ohio



Biggs Standard Inner Tube Vulcanizer equipped with two Outside Transfer Trucks, two inside cars together with two sets of spacing bars.



Simplex Quick-Opening Door.



Adamson Quick-Opening Door, Hinged Type.

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The "cure" for your troubles

The Biggs BOILER WORKS CO. EST 1884 AKRON OHIO

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UNIQUE CHUCK

THE RESULT OF OVER SIX YEARS OF DEVELOPMENT

All-Steel Construction
Outlasting Many Cores

ONE TYPE ONE SIZE

FOR 100% PRODUCTION

Do not let chucks stand idle with your cores—any size core *for tires with base diameters of from 20" to 27" and cross sections up to* 6.75" may be quickly mounted.

Only four bolts required.

Weight Less Than 40 Pounds
Price — Interesting — Write

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Your problems are our problems.
Let us work with you.

Specializing in Tire Building Equipment

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Vacuum Cup Cord Tires

Pennsylvania Rubber Company
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General Offices:
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Ideal for Heavy Rubber Compounds

Speed, Strength and efficient operation are all attained in the construction of this machine. Exceedingly strong, yet careful design keeps power consumption down to the minimum. In the rubber factory where stiff, putty-like compounds must be properly stirred to the right consistency, there is no mixer that will quite equal the DAY Imperial for giving faithful service day after day.

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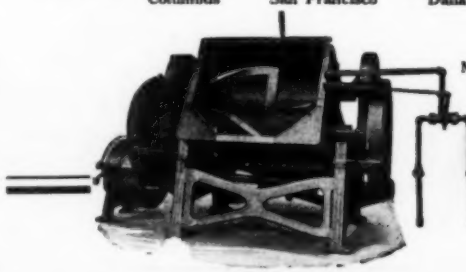

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RED OXIDES OF IRON

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"DURO" Brand Washed and Dried Ready for Compounding

A comparatively small percentage in a compound will make a stock run smoother on calenders and tubing machines, without depreciating the quality. Especially useful in frictions.

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Cash and Due from Banks		$ 4,055,543.31
Acceptances & Call Loans secured by Acceptances		8,233,209.99
U. S. Government Securities		14,360,955.13
Other Securities and Advances		20,941,728.80
Customers' Liability a/c Acceptances and Letters of Credit		31,907,947.96
		$79,499,385.19

LIABILITIES

Subscribed Capital & Surplus	$15,250,000.00	
Capital Paid In		$10,250,000.00
Undivided Profits and Reserves		2,303,837.26
Due Banks and Customers		33,814,758.66
Acceptances and Letters of Credit Outstanding		33,130,789.27
		$79,499,385.19

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DANIEL G. WING, *Vice-Chairman* — F. ABBOT GOODHUE, *President*

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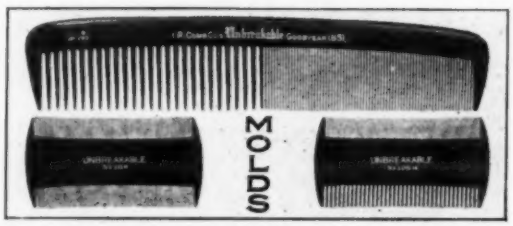
"ST. LAWRENCE"	Ins. Wire, Auto Tire Friction, Etc.

All "NEARPARA" Stocks uniform and contain a high percentage of rubber



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Manufacturer of

Reclaimed Rubber

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Standardized Quality

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specialize
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MECHANICAL,
HYDRAULIC,
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and
ELECTRICAL
EQUIPMENT
for
both
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FACTORIES

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PHONE Central 1488 50 GRAMS Calender, Manchester

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"AUWICO"
GRITLESS RUBBER COLORS

ARE
- Especially made for the Rubber Trade.
- Amorphous, and GRITLESS.
- Sulphur free.
- Inert, and contain no ingredients detrimental to rubber compounding.
- Tinctorially strong and of pure tone.
- Of light specific gravity.

WILL
- Withstand all cures.
- Not bleed.
- Work well with standard Accelerators.
- Not affect tensile strength.
- Give full shades with 1% to 2%.

SEND for colored vulcanized rubber samples, and the GRITLESS COLORS themselves.
OUR Rubber Laboratory is at your disposal.
LET us help you solve your COLOR PROBLEM.

GRITLESS RUBBER COLORS
ONLY MADE BY
THE AULT & WIBORG CO.
CINCINNATI, OHIO, U. S. A.

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Entire freedom from bead trouble in the construction of straightside tires is assured by the use of either National (Patented) High Tensile Strength, Flat Woven Bead Braid or our new (Pratt Patent) Bead Cables. These cables, made to dimensions specified, have seven strands, yet only one piece of wire is used without soldered, welded or brazed joint.

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OUR ORGANIZATION IS EQUIPPED TO TAKE CARE OF YOUR REQUIREMENTS IN

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A
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Cross-Section of TAG-Hespe Glass
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190
170
150
130
110
View of Portion of Thermometer with TAG-HESPE GLASS
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A *soft* gas black—does not stiffen a rubber mix. Properly used in the right place is just as valuable as the better known standard blacks.

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A hard, stiff clay produced in the best manner known and supplied directly to the rubber goods manufacturer.

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Precipitated—snow white. Hardens a rubber mix considerably.

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Just a good material at a reasonable price giving unbiased satisfaction.

"Hard Hydrocarbon"

Either solid or granulated.

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A moderately soft competitive clay from a plant equipped to produce solely for rubber compounding.

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Natural mined—finely ground. Makes a very soft rubber mix. One of the cheapest ingredients available.

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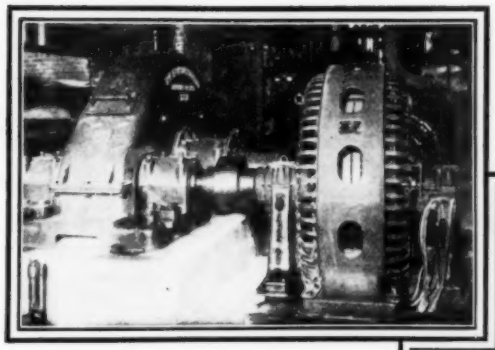

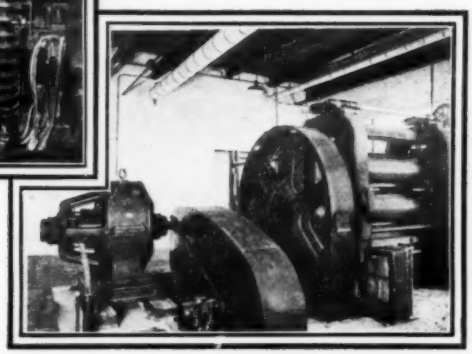

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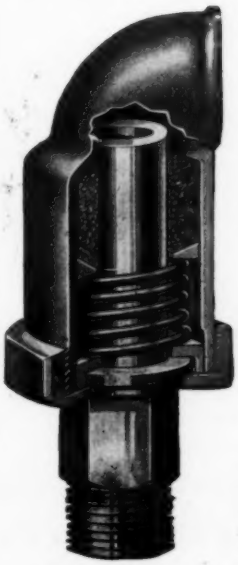

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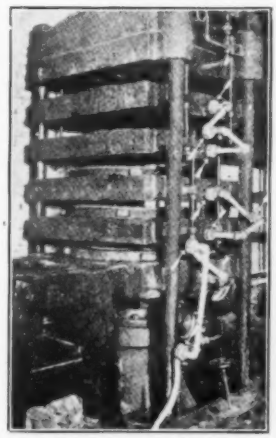

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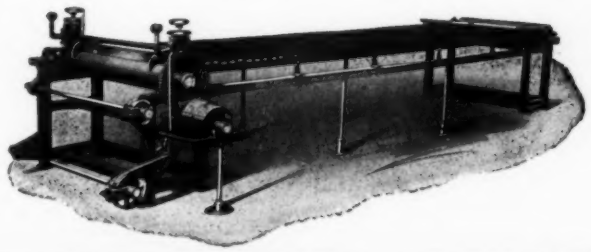

makes them particularly well adapted for applying thin successive coatings of rubber for the manufacture of high grade sheetings, rain coatings, offset blankets, etc.

MACHINES MADE IN WIDTHS FROM 50-in. to 80-in.

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E. D. Hewins, Inc.

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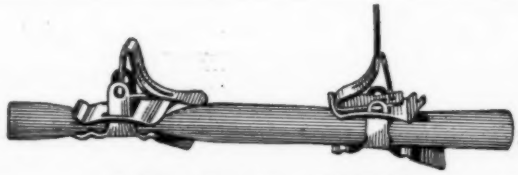

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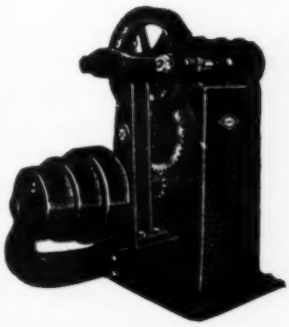

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Insulating, Tubing and Rubber Straining Machines.

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Specialists in Molded Soft Rubber Articles.
Rubber Soles, Heels and Mechanical Specialties.

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Molds, cores and rubber machinery.
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QUAKER CITY RUBBER CO.
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Heels, Soles, Hot Water Bottles, Syringe Bags, Bulbs, Toys, Mechanical Goods, Battery Jars and Covers, Hard Rubber Pipes and Negatives. Labor Saving Devices. Machines built to order.
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FAWCUS
SPUR WORM BEVEL GEARS
SPEED REDUCERS
FAWCUS MACHINE CO. PITTSBURGH, PA.

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Uniform, high-grade quality specially adapted for rubber manufacturers. Write for sample and prices
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Consulting Rubber Engineer
GREENSBURG, PA.

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Broker in Crude Rubber, Gutta Percha and Allied Gums
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THIRTY YEARS' EXPERIENCE IN RUBBER MANUFACTURING
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MANUFACTURERS OF
MOULDS, DIES, TOOLS AND MACHINES
PROSPECT STREET TRENTON, N. J.

LOTHAR E. WEBER, Ph. D.
Analytical and Consulting Rubber Chemist
729 Boylston St., Boston

MAHLOW & WYCKOFF, Trenton, N.J.
MACHINISTS AND TOOLMAKERS
Hard Rubber and Soft Rubber Molds
Special Machinery. Machinery Built to Order
If you have operations which you now do by hand and wish to do the same by machine, we would be pleased to have you take the matter up with us.

JOHN B. TUTTLE
CONSULTING CHEMIST RUBBER TECHNOLOGIST
RESEARCH PLANNED AND DIRECTED
75 Bedford Street New York
Telephone Spring 7487

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SOLE PRODUCERS OF PURE **ASBESTINE** SPECIALLY PREPARED FOR USE IN RUBBER
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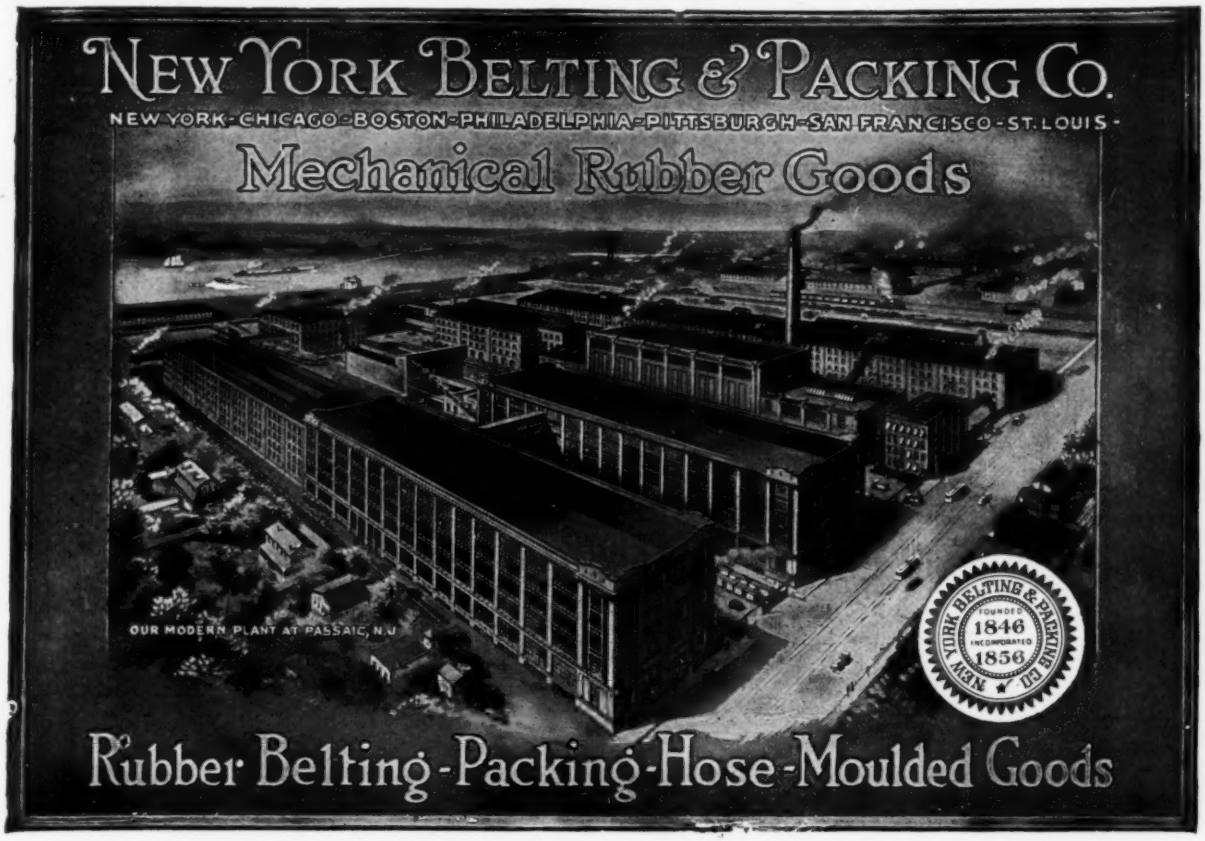
NEW YORK BELTING & PACKING CO.
NEW YORK - CHICAGO - BOSTON - PHILADELPHIA - PITTSBURGH - SAN FRANCISCO - ST. LOUIS -
Mechanical Rubber Goods
OUR MODERN PLANT AT PASSAIC, N.J.
NEW YORK BELTING & PACKING CO.
FOUNDED 1846
INCORPORATED 1856
Rubber Belting - Packing - Hose - Moulded Goods

Established 1900 Incorporated 1919

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Automobile Tire Molds and Cores

GENERAL MACHINE WORK

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RUBBER HEEL BURRS

FLAT and CUPPED

Buy the Burrs with

CENTRAL HOLES

J. H. SESSIONS & SON

East Street, Bristol, Connecticut U. S. A.

WISHNICK-TUMPEER CHEMICAL COMPANY

CARBON BLACK

Spot Stocks Carried at

Chicago
365 E. Illinois St.

Cleveland
Davenport & E. 14th St.

Brooklyn, N. Y.
130 44th Street

Small Advertisement Department

SITUATIONS WANTED

PATENT ATTORNEY, FORMER PATENT OFFICE EXAMINER, NOW retained on part time by large manufacturing corporation, desires a similar arrangement with another corporation in non-competitive line to handle its patent matters for fixed annual retainer. Address Box No. 7331, care of THE INDIA RUBBER WORLD.

HAVE YOU AN OPENING ON YOUR TECHNICAL SALES STAFF for a young experienced rubber chemist with a thorough knowledge of salesmanship? At present employed. Address Box No. 7341, care of THE INDIA RUBBER WORLD.

WANTED: POSITION AS FACTORY MANAGER OR SUPERINTENDENT, by man with 26 years' experience, 12 years as superintendent. Thoroughly experienced in compounding, mill-room work, construction of tires, tubes and general mechanical work; up-to-date on all methods and can give results. Am now employed. Will give best of references. Address Box No. 7348, care of THE INDIA RUBBER WORLD.

SALES REPRESENTATIVE: 34, 10 YEARS' EXPERIENCE SELLING mechanical rubber goods and rubber sundries in Philadelphia territory desires to represent manufacturer in same territory about September 15. Address Box No. 7349, care of THE INDIA RUBBER WORLD.

PROGRESSIVE POSITION REQUIRED BY SALESMAN AND ORganizer of proved ability in tires, tubes, mechanicals, waterproof (motor hood, upholstery, garment, surgical) piece goods. Live selling connection, British (home and export) and continental markets. Knowledge of engineering and belting trade. Age 34. Perfect French and German. Remuneration commission and expenses basis with guaranteed minimum. Write Box 293 Willings, 30 King Street, Covent Garden, W. C. 2. (7339)

WANTED POSITION: SUPERINTENDENT, MAINtenance expert, mold designer and maker of tire molds and equipment. 15 years' experience; act quick. Address Box No. 7340, care of THE INDIA RUBBER WORLD.

GERMAN CHEMIST, AGE 34, WITH BROAD EXPERIENCE IN laboratory work on soft rubber goods, desires position. Recently superintendent-manager of a tire factory. Laboratory research work preferred. Address Box No. 7378, care of THE INDIA RUBBER WORLD.

FACTORY SUPERINTENDENT DESIRES NEW CONNECTION; twenty-two years' experience in the leading rubber manufactories. I specialize in solid tires, pneumatic, both standard and balloon types. A specialist in compounding, development and efficiency work both factory and laboratory, clever in handling labor and can hold factory troubles to a minimum. Can personally develop manufacturing operations to capacity. Address Box No. 7338, care of THE INDIA RUBBER WORLD.

PRACTICAL MAN WITH BROAD EXPERIENCE WILL BE OPEN FOR position after September 1 as superintendent of rubber and cork floor installations. Thoroughly familiar with floor tests and backing requirements. Unqualified references. Address Box No. 7342, care of THE INDIA RUBBER WORLD.

SUPERINTENDENT; MECHANICAL GOODS OR TIRES; PRACTICAL in all departments, including compounding. Will take temporary or permanent position. Address Box No. 7351, care of THE INDIA RUBBER WORLD.

SITUATIONS WANTED—Continued

WANTED: A POSITION AS ASSISTANT SUPERINTENDENT, PRODuction manager or inner tube foreman. 15 years' experience. Can furnish the best of references. Address Box No. 7343, care of THE INDIA RUBBER WORLD.

SUPERINTENDENT NOW OPEN FOR POSITION; OVER TWENTY years' experience in the proofing of all kinds of fabrics, calender and spreader work also including auto top fabric, hospital sheetings and black satin for shoe trade. Best of references. Address Box No. 7324, care of THE INDIA RUBBER WORLD.

EXPERIENCED RUBBER CHEMIST, UNIVERSITY graduate with exceptionally broad training, desires position as chemist or assistant to superintendent. Understands thoroughly the most up-to-date methods of compounding tires, tubes, wire insulation and mechanical rubber goods. Address Box No. 7366, care of THE INDIA RUBBER WORLD.

POSITION WANTED BY YOUNG MAN WITH GOOD PRACTICAL experience and executive ability in mill and calender work and also familiar with the compound and mixing departments. Address Box No. 7365, care of THE INDIA RUBBER WORLD.

FACTORY MANAGER WITH MANY YEARS' EXPERIENCE AND AN excellent record in all branches of the tire and tube business. Graduate chemist with thorough knowledge of compounding and modern production methods. Will be available about October 15. Address Box No. 7377, care of THE INDIA RUBBER WORLD.

SALESMAN COVERING NEW ENGLAND WISHES TO GET IN touch with reliable concerns desiring to be represented in that district. Thoroughly conversant with the following lines: crude rubber, reclaimed rubber, fillers and pigments of all kinds for the rubber trade. Address Box No. 7357, care of THE INDIA RUBBER WORLD.

RUBBER CHEMIST: SEVEN YEARS' EXPERIENCE, FIVE IN LAST position. Good knowledge of factory control, compounding, accelerators, experience in compounding for tubes, tires, druggists' sundries, waterproof goods. Can go anywhere. Age twenty-nine. Address Box No. 7361, care of THE INDIA RUBBER WORLD.

CALENDER AND MILLROOM FOREMAN NOT AFRAID OF WORK, having years of practical experience on all kinds of calendering, etc., desires a position where results shown are principal factors. Best of references. Address Box No. 7354, care of THE INDIA RUBBER WORLD.

ESTIMATOR AND COST ACCOUNTANT OF LONG EXPERIENCE, thoroughly familiar with tires, tubes, mechanical goods, both specification and commercial grades. Available immediately. Address Box No. 7346, care of THE INDIA RUBBER WORLD.

SUPERINTENDENT OR FACTORY MANAGER 20 YEARS' PRACTICAL experience in rubber manufacture, up-to-date methods. With large concern. Address Box No. 7376, care of THE INDIA RUBBER WORLD.

FOREMAN OF CALENDER AND MILL ROOMS AT PRESENT EMployed. Competent in handling help and production, etc. Will consider foreign or domestic position. Address Box No. 7379, care of THE INDIA RUBBER WORLD.

Machines for Wrapping

paper or burlap around Tires, Coils of Wire, Rubber hose, Straight bar stock, etc. Simple, Easy to Operate. Tight, Uniform wrap.

Complete catalog on request.

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ANNOUNCEMENT TO THE TRADE

We wish to announce that **STEWART BOLLING, JR.** and **H. D. ANDRESS,** formerly our representatives at 617 Swetland Building, Cleveland, are no longer connected with us. Our Cleveland office and its territory is now in charge of **MR. F. H. SMITH.**

SOUTHWARK FOUNDRY AND MACHINE CO.

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ROBERT J. METZLER, Inc.

Rubber Manufacturing Plants or Complete Machinery installations bought for cash.
We always have a large stock of used Machinery and Equipment—all modern design in good condition and reasonably priced.

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Established 1873

Cable Address UNITMOSQUE.

WM. H. CUMMINGS & SONS
BUY AND SELL RUBBER SCRAP
30 Church Street, New York, U. S. A.

(Advertisements continued on page 70)

EMBOSSING CALENDERS

For Artificial Leather, Oil Cloth, Carriage and Automobile Covers

DRYING MACHINES

with Copper or tinned iron Cylinders for Cotton Ducks Drills and Sheetings

The Textile-Finishing Machinery Co.

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Makers of

Labor Saving Machinery for the Rubber Trade, Automatic Washer Cutting Machines, Jar Ring Cutting Machines, Brake Lining Calenders, Trimming Machines, Special Machinery

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MOLD MANUFACTURERS

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(Montello Station)

Bibb Manufacturing Co.

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BALATA—GUTTA PERCHA
LIQUID RUBBER LATEX

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Cables: Vademecum, Outerly } London

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The accelerator for "low-sulphur" stocks, non-blooming compounds, high tensile and better aging quality. Also efficient in cements.

ESTABLISHED 1828 CHEMICALS ZINC GRASSELLI EXPLOSIVES DYESTUFFS

THE GRASSELLI CHEMICAL CO.

INTERMEDIATES AND RUBBER ACCELERATORS

117 Hudson St. NEW YORK

Small Advertisement Department—Continued

SITUATIONS WANTED—Continued

CHIEF CHEMIST, BROAD EXPERIENCE TIRES, TUBES, MECHANicals, chemical and factory control. Address Box No. 7375, care of THE INDIA RUBBER WORLD.

CHEMIST AND TECHNICAL SUPERVISOR: FIFTEEN YEARS' EXperience as head of laboratories and in charge of factory control on pneumatics, tubes, solids, etc. Thorough knowledge of all details. Open for immediate engagement. Address Box No. 7363, care of THE INDIA RUBBER WORLD.

INTERVIEW SOLICITED WITH COMPANY REquiring executive who can qualify as factory manager, superintendent, cost accountant or as assistant to these positions. Man with years of experience in mechanical goods, tires and tubes, seeking position that carries assurance of future advancement with well established company. Can furnish first class references. Address Box No. 7367, care of THE INDIA RUBBER WORLD.

WANTED: POSITION BY YOUNG MAN 28 YEARS OLD, MARRIED. Would prefer position in rubber factory as rubber buyer and/or compound buyer. Would consider position with rubber dealer. Seven years' experience in advisory positions in rubber department of rubber factory and two years in Singapore as manufacturer's representative on crude rubber. At present in the crude rubber business for himself. Best of credentials. Further information on request. Address Box No. 7370, care of THE INDIA RUBBER WORLD.

RUBBER COVERED WIRE: POSITION BY COLLEGE GRADUATE with nine years' practical experience as supervisor of production, inspection methods and machine improvement. Will bring rubber compounds just perfected which will effect considerable saving in labor and material cost. No theories except those proved by actual practice. Long hours and hard work are no objection to prove ability. Address Box No. 7371, care of THE INDIA RUBBER WORLD.

SITUATIONS OPEN

WANTED: EXPERIENCED MOLD MAKER TO MANAGE SHOP, ESTImate and design mechanical rubber molds. State experience past five years, present employment, age, married or single, salary. Location Middle West. Address Box No. 7356, care of THE INDIA RUBBER WORLD.

TUBE SPLICER WANTED: EXPERIENCED; STEADY POSITION. Address Box No. 7322, care of THE INDIA RUBBER WORLD.

FOREMAN WANTED: EXPERIENCED AND RELIABLE MAN TO ACT as foreman in insulating and compounding departments. Applicant will be expected to take charge of three insulators and two rubber mills in factory located in Brooklyn, N. Y. State age, experience, salary expected, etc. Address Box No. 7368, care of THE INDIA RUBBER WORLD.

BRANCH MANAGER WANTED: UNUSUAL OPPORTUNITY FOR AN experienced rubber man. This position is open for a man who has a following in the New York territory on mechanical rubber goods and tires, with headquarters in New York City. State your qualifications fully in first letter, which will be held in strict confidence. Address Box No. 7381, care of THE INDIA RUBBER WORLD.

BUSINESS OPPORTUNITIES

FOR SALE: MODERN TIRE FACTORY, FULLY EQUIPPED. 235,000 square feet floor space. Cheap power. Good labor conditions. Immediate possession. For full information address F. F. Chadwick, Fort Madison, Iowa. (7360)

MECHANICAL MOLDED RUBBER GOODS PLANT completely equipped and operating. 23,000 square feet in five buildings. Central location in rubber manufacturing district. Address Technical Service Company, Woolworth Building, New York, N. Y., Whitehall 5690. (7359)

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The French Scientific, Industrial & Commercial Rubber Journal

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Subscription price: 40 frs. a year

This is the paper for advertising your machinery, supplies and goods for any business in France and on the Continent. Write today for advertisement rates.

BUSINESS OPPORTUNITIES—Continued

AN OPPORTUNITY IS OFFERED TO A MANUFACturing organization or individual to take over the manufacture and sale of a patented metal product used by every rubber manufacturer making inner tubes. The product offered can be made and handled to best advantage by machine shops or sheet metal works catering to the rubber industry. For particulars address Box No. 7323, care of The India Rubber World..

WANTED: TO PURCHASE TIRE FACTORY READY TO OPERATE, with capacity of 400 casings daily. Address Box No. 7358, care of THE INDIA RUBBER WORLD.

FOR SALE OR RENT, WITH OPTION TO PURCHASE, RUBBER footwear and hard rubber factory fully equipped, two acres of land on harbor, about fifty miles from New York City; 500 h.p. engines and boilers, good condition and ready to run. Henry S. Mott Co., Northport, N. Y. Tel. Northport 22. (7330)

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BY DIRECTION OF HIS MAJESTY'S GOVERNMENT **EX-ENEMY PROPERTIES** IN THE BRITISH SPHERE OF

THE CAMEROONS, West Africa

CACAO, OIL PALM, AND RUBBER PLANTATIONS

of various areas from **200 TO 35,000 ACRES**

upon which are Managers' Bungalows, Overseers', Artisans' and Labourers' Houses, Hospitals, Cacao and Rubber-curing Factories and Stores, Furniture, Tools, etc. BANANA, TOBACCO and SUGAR LANDS, Light Railways, Rolling-stock, Locomotives, Bridges, Machinery and Saw Mills. Also TRADING, FACTORY and BUILDING SITES, COMMERCIAL PREMISES, PIERS, LANDING PLACES and DWELLINGS. PROPERTIES OF FREEHOLD AND LEASEHOLD TENURE to interest the large or small Trader and Planter. THE WHOLE WITH VACANT POSSESSION.

The Sale will be Open to Purchasers of all Nationalities without reservation.

HAMPTON & SONS have been favoured with instructions to SELL the above by AUCTION, at WINCHESTER HOUSE, OLD BROAD STREET, E. C., LONDON, ENGLAND, in numerous Lots, on MONDAY and TUESDAY, NOVEMBER 24th and 25th, 1924, at 2.30 p. m. on each day. EVERY LOT WILL BE SOLD TO THE HIGHEST BIDDER. ABSOLUTELY WITHOUT RESERVE.

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A short synopsis of each lot may be obtained (price 1s. each) or full detailed particulars with plans and views (price 21s. each) from the Auctioneers,

HAMPTON & SONS, 28, St. James'-Square, LONDON, S.W.1., ENGLAND

FOR SALE AT NORTHPORT, LONG ISLAND, 28,000 SQUARE FEET of land adjoining railroad freight yard; 2-story factory building containing over 16,000 square feet with garage 40 by 20 feet. Having moved to larger quarters, owners have no use for this plant. Price $30,000 includes rubber machinery, consisting of electrically equipped calender and mills, boiler house, vulcanizer, etc., suitable for making any class of rubber goods, especially auto tubes and rubber bands. Terms to suit. The Siola Rubber Manufacturing Co., Inc., 84 Forrest Street, Brooklyn, N. Y. (7329)

WANTED, A PARTNER: A MAN EXPERIENCED IN THE TOY rubber balloon business, preferably with executive or selling experience or ability to invest small sums in capital stock of going concern as earnest money and to assist in the factory management of the plant. Address Box No. 7378, care of THE INDIA RUBBER WORLD.

FOR SALE: A GOING MECHANICAL RUBBER GOODS plant near Boston, well equipped; price very low. Capable of immediate production. Address Box No. 7344, care of THE INDIA RUBBER WORLD.

WANTED: EASTERN MANUFACTURER OF MECHANICAL MOLDED goods wants connection with party controlling selling cutlet for some specialties. Might make partnership arrangements., Address Box No. 7345, care of THE INDIA RUBBER WORLD.

We buy and Sell New and Second-Hand

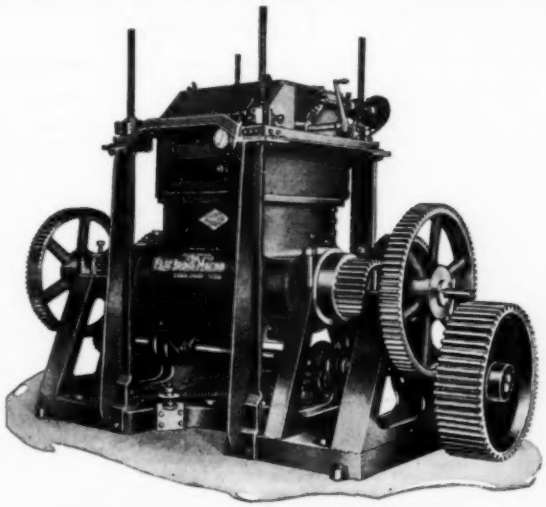
RUBBER MACHINERY

AND EQUIPMENT

L. ALBERT & SON

680 N. Olden Ave., Trenton, N. J.

(Advertisements continued on page 72)



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AND RUBBER COMPOUND MIXER

The last word in efficiency and economy.
An internal mixer that really does the work.
Write for full information

The Fast Iron & Machine Co.
LIMA, OHIO, U.S.A.

CHOSEN BY LEADERS

The B. F. Goodrich Rubber Company has chosen the **Banner Band Builder** for the production of Goodrich Silvertown Cord Tires.

Send for Bulletin

The Banner Machine Company
COLUMBIANA AND AKRON, OHIO

BERGENPORT BRAND
PURE SOFT SULPHUR
PREPARED ESPECIALLY FOR
Rubber Manufacturers
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Buoy Baby Pants
Pure Rubber Sheets
Powder Puff Pockets
Sanitary Requisites
Rubber Bibs
Rubber Specialties

Made by BROOKLYN SHIELD & RUBBER CO., *Est. 1880*
Sumner Ave and Halsey St., Brooklyn, New York
"They Last Longer"

A COMPLETE LINE OF
Rainproof Coats Manufactured
for the Wholesale Trade by
The BADGER RAINCOAT CO.
PORT WASHINGTON WISCONSIN
Quality and Workmanship of the Best

Show Rooms For Convenience of Buyers
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FARQUHAR
HYDRAULIC PRESSES

Built to Specification for Every Purpose
Hot Plate Presses for High Pressure a Specialty
Accumulators, Pumps, Valves, etc.
Special Machine Work
Tanks, Gray Iron and Semi-Steel Castings

A. B. Farquhar Co., Limited, Box 102, York, Pa.

Small Advertisement Department—Continued

BUSINESS OPPORTUNITIES—Continued

WE WANT TO GET IN COMMUNICATION WITH PARTIES WANTing a rubber plant. Capacity 2,500 tires and 4,000 tubes per day. Address Box No. 7362, care of THE INDIA RUBBER WORLD.

RUBBER FLOORING: WANTED RESPONSIBLE NEW YORK CONcern in position to contract to buy production of new department being started. Address Box No. 7350, care of THE INDIA RUBBER WORLD.

I WILL START ANY INTERESTED COMPANY OR INDIVIDUAL IN any one or all of the following rubberizing processes: Proofing and manufacturing policemen's, firemen's and boys' black rubber surface coats. Proofing auto top fabric. Proofing black satin for shoe trade. Proofing hospital sheetings and all general double and single textures for raincoats. Address Box No. 7325, care of THE INDIA RUBBER WORLD.

MACHINERY AND SUPPLIES WANTED

WANTED: 4 OR 6 VULCANIZERS, OUTSIDE PACKED, 48 INCHES by 15 feet by 14-inch ram. Give all particulars, including age, make and price of this equipment. Also a line of three 60-inch mills, complete with Cutler-Hammer clutch and coupling; in fact everything up to motor. Address Box No. 7352, care of THE INDIA RUBBER WORLD.

WANTED: TWO TUBE VULCANIZERS, QUICK-OPENING DOORS, equipped with two outside transfer trucks, cars and spacing bars. Also refiner. State make, size, price and other information. Address Box No. 7347, care of THE INDIA RUBBER WORLD.

MILL LINE WANTED

THREE 60-INCH BY 22-INCH BY 20-INCH MILLS.
One 250 h.p. reduction gear.
One 36-inch Cutler-Hammer clutch.
One 250 h.p. 60-cycle 440 a. c. motor with starting panel.
Address Armstrong Rubber Co., West Haven, Conn. (7353)

WANTED: THREE (3) VACUUM DRIERS.
Two (2) heavy duty mixers.
A few steel rolls.
Address Box No. 7333, care of THE INDIA RUBBER WORLD.

MACHINERY AND SUPPLIES FOR SALE

FOR SALE: HYDRAULIC ACCUMULATOR AND PUMP, ROYLE tubing machine. Address Box No. 7372, care of THE INDIA RUBBER WORLD.

FOR SALE

One practically new 66-inch, 3-roll Wellman-Seaver-Morgan calender, equipped with Farrel of Ansonia chilled rolls. Complete with General Electric 100 h.p., 250 volt variable speed motor, full automatic control panel, and herring-bone enclosed gear reduction.

One complete rubber mixing and warming mill unit used less than three months, consisting of 3, 60-inch Wellman-Seaver-Morgan mills with Farrel chilled rolls, cut herring-bone gears, W-S-M cut herring-bone gear reduction, C-H magnetic clutch brake and 250 h.p. Allis Chalmers slip ring motor, 440-volt, 3-phase, 60-cycle, with drum control and push button stop, pans, gear guards and drive shaft included.

Both items priced to move in 30 days. No reasonable offer refused. Address Box No. 7380, care of THE INDIA RUBBER WORLD.

RUBBER MACHINERY FACTORY OVERSTOCKS

On Hand for Immediate Shipment

MIXING MILLS — VULCANIZERS
CEMENT CHURNS — SPREADERS

LAWRENCE N. BARRY
10 Alden Street — Boston, Mass.

M. NORTON & COMPANY
MEDFORD, MASS.
New, Old, Cured and Uncured Scrap Rubber
ALL KINDS SECOND HAND RUBBER
MILL MACHINERY BOUGHT AND SOLD
Office and Warehouse, Locust Street, Medford, Mass.

Surplus Equipment

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(Advertisements continued on page 74)

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"I am very well pleased with Firestone Balloon Gum-Dipped Cords. Drove from Hot Springs, S. D., February 11, to Hettinger, N. D., a distance of 291 miles, most of the way through snow, mud and bumps, and without chains."—Sam Thompson, Hettinger, N. D.

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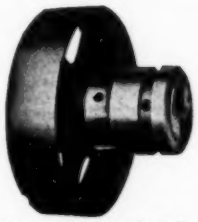

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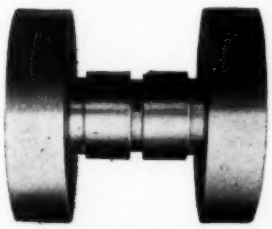

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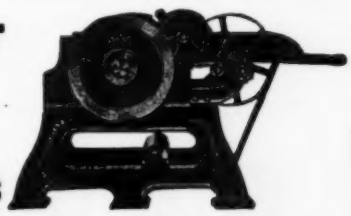

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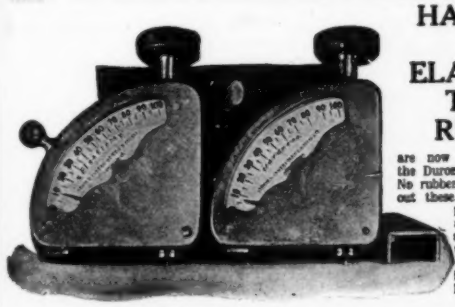

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(Advertisements continued on page 70)

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Gutta Percha & Rubber Mfg. Co., N. Y.
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New York Belting & Packing Co., New York.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia.
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Canfield Rubber Co., Bridgeport, Conn.
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Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
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Davol Rubber Co., Providence, R. I.
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North British Rubber Co., Ltd., Edinburgh, Scotland.
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Gaskets, Gasket Rings, Tubing and Washers.

Boston Belting Co., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.

Gaskets, Gasket Rings, Tubing and Washers—Continued.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Canfield, H. O., Co., Bridgeport, Conn.
Essex Rubber Co., Trenton, N. J.
Gutta Percha & Rubber Mfg. Co., New York.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City, N. J.
Western Rubber Co., Goshen, Ind.

Grain Drill Tubes.

Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Gutta Percha and Rubber, Limited, Toronto, Canada.

Hat Bags.

Boston Belting Co., Boston, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., N. Y.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City.

Horse Shoe Pads.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Western Rubber Co., Goshen, Ind.

Hose Bands, Straps and Menders.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Western Rubber Co., Goshen, Ind.
Yerdon, William, Fort Plain, N. Y.

Hose—Armored.

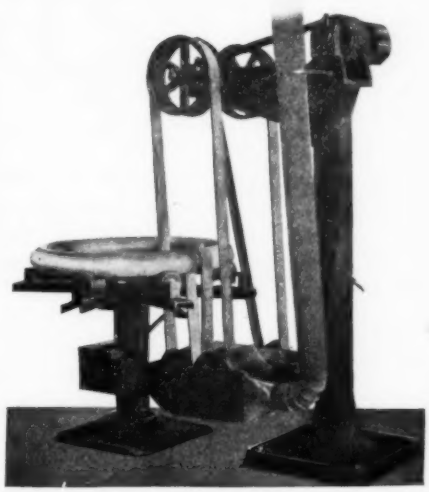
Woven Steel Hose & Rubber Co., Trenton, N. J.

Hose—Rubber.

Air Brake, Fire, Garden, Pneumatic, Suction, Submarine, Vacuum, Dredging Sleeves.

Acme Rubber Mfg. Co., Trenton, N. J.
Boston Belting Co., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.

For Complete Addresses See Advertisements—Index Page 109



Announcing Our New

Belt Polishing Machine

For Circular Mandrels

With the increasing popularity of circular mandrels for making balloon inner tubes the manufacturer is confronted with the problem of cleaning.

This new belt polishing machine quickly removes any deposits and restores the high lustre so necessary for producing a perfect product.

Let us send you further details

Makers of mandrels for Garden and Steam Hose, Car Coupling Hose and Fruit Jar Rings.

Distributors of the Clyde E. Lowe Seamless Cold Bent Circular Mandrels.

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Branch Plant
AKRON, OHIO

868 Windsor Street
HARTFORD, CONN.

RUBBERIZED FABRICS

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Archer Strauss Rubber Company
Framingham, Mass.

The Schwarzwaelder Company

HARRY M. DANNENBAUM, Pres.

RUBBERIZED FABRICS

"Weathers Any Weather"

1017-21 Wood St. Phila., Pa. 3630 Richmond St.

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GODFREY L. CABOT, Inc.

940 Old South Building
BOSTON, MASS.

AGENCIES IN
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San Francisco Pittsburgh
St. Louis Cincinnati

611 Metropolitan Building
AKRON, OHIO

RUBBER BUYERS' DIRECTORY—Mechanical Rubber Goods

Hose—Rubber—Continued.

Gutta Percha & Rubber, Ltd., Toronto.
Gutta Percha & Rubber Mfg. Co., New York.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia, Pa.
Schrader's, A., Son, Inc., Brooklyn, N. Y.
Thermoid Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City, N. J.
Western Rubber Co., Goshen, Ind.
Whitehead Bros. Rubber Co., Trenton, N. J.
Woven Steel Hose & Rubber Co., Trenton, N. J.

Hose Pipes, Nozzles, Couplings, Clamps, Fittings, Racks and Reels.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., N. Y.
Manhattan Rubber Mfg. Co., Passaic, N. J.
N. Y. Belting & Packing Co., New York.
Southwark Foundry & Machine Co., Philadelphia, Pa.
United States Rubber Co., New York.
Woven Steel Hose & Rubber Co., Trenton, N. J.

Hose—Rubber Lined.

Cotton and Linen.

Acme Rubber Mfg. Co., Trenton, N. J.
Boston Belting Co., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Cincinnati Rubber Mfg. Co., Cincinnati, O.
Fabric Fire Hose Co., New York.
Gutta Percha & Rubber Mfg. Co., N. Y.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia.
Stokes, Jos., Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City.
Whitehead Bros. Rubber Co., Trenton, N. J.
Woven Steel Hose & Rubber Co., Trenton, N. J.

Hose Linings.

Boston Belting Co., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.

Hose Linings—Continued.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., New York.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City.

Lawn Sprinklers.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.

Mallets (Rubber).

Boston Belting Co., Boston, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City, N. J.
Western Rubber Co., Goshen, Ind.

Matting—Carriage Mats and Stair Treads.

Acme Rubber Mfg. Co., Trenton, N. J.
Boston Belting Co., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Cincinnati R. M. Co., Cincinnati, O.
Essex Rubber Co., Trenton, N. J.
Gutta Percha & Rubber, Ltd., Toronto Canada.
Gutta Percha & Rubber Mfg. Co., New York.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic N. J.
New York Belting & Packing Co., N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia Pa.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City
Western Rubber Co., Goshen, Ind.

Mold Work.

(See Mechanical Rubber Goods.)

Acme Rubber Mfg. Co., Trenton, N. J.
Boston Belting Co., Boston, Mass.
Canfield, H. O., Co., Bridgeport, Conn
Canfield Rubber Co., Bridgeport, Conn.
Cincinnati R. M. Co., Cincinnati, O.

Mold Work—Continued.

Davol Rubber Co., Providence, R. I.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Gutta Percha & Rubber Mfg. Co., New York.
Gutta Percha & Rubber, Ltd., Toronto.
Hale, Alfred, Rubber Co., Atlantic, Mass.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City, N. J.
Western Rubber Co., Goshen, Ind.
Whitall Tatum Co., New York.

Oil Well Supplies.

Boston Belting Co., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd. Montreal, Canada.
Cincinnati Rubber Mfg. Co., Cincinnati Ohio.
Gutta Percha and Rubber, Limited. Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., N. Y
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., N. Y.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City.
Western Rubber Co., Goshen, Ind.
White, S. S. Dental Mfg. Co., The, Philadelphia, Pa.

Packing.

(See Mechanical Rubber Goods.)

Boston Belting Co., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Cincinnati Rubber Mfg. Co., Cincinnati, O.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber, Limited Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., New York.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia, Pa
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City, N. J.
Western Rubber Co., Goshen, Ind.
Whitehead Bros. Rubber Co., Trenton, N. J.

Paper Machine Rolls and Deckle Straps.

Boston Belting Co., Boston, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Farrel Foundry & Machine Co., Ansonia, Conn.
Gutta Percha & Rubber Mfg. Co., N. Y.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City.

Plumbers' Supplies.

Force Cups, Fuller Balls.

Acme Rubber Mfg. Co., Trenton, N. J.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Canfield Co., H. O., Bridgeport, Conn.
Canfield Rubber Co., Bridgeport, Conn.
Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Davol Rubber Co., Providence, R. I.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Hodgman Rubber Co., Tuckahoe, N. Y.
Home Rubber Co., Trenton, N. J.
New York Belting & Packing Co., N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

Rolls—Rubber Covered.

Acme Rubber Mfg. Co., Trenton, N. J.
Boston Belting Co., Boston, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Cincinnati R. M. Co., Cincinnati, O.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia, Pa
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City, N. J.
Western Rubber Co., Goshen, Ind.

Sewing Machine Rubbers.

Canfield Rubber Co., Bridgeport, Conn.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Western Rubber Co., Goshen, Ind.

Specialties.

Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
Manhattan Rubber Mfg. Co., Passaic, N. J.

Tiling.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
New York Belting & Packing Co., N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Stedman Products Co., South Braintree, Mass.
Voorhees Rubber Mfg. Co., Jersey City.
Western Rubber Co., Goshen, Ind.

For Complete Addresses See Advertisements—Index Page 108

CARBON BLACK

An inert pigment which smoothes and toughens tire compounds and materially lessens claims for adjustments.

Equally adapted to other compounds where durability and resiliency are required.

SEAVER & CO. Established 1882 — 3 TREMONT ROW, Olympia Bldg. BOSTON, MASS.

ESTABLISHED 1894

COG-CORD TIRES and MOLDS

New Design Cord Tires.

Also make and sell Molds, Tire Shop Outfits and Supplies.

Write for items in which you are interested.

Chas. E. Miller

Anderson Rubber Works, Sales Dept., 1410 Meridian St., Anderson, Ind., U. S. A.

Materials *for* Rubber Industries

THE H. J. ADAMS COMPANY

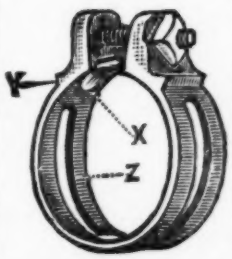
Second National Building AKRON, OHIO

The Carter Bell M'f'g *Co.*

Highest Grade RUBBER SUBSTITUTES *White, Brown & Black*

150 Nassau Street New York

You Get the Biggest Return



in all the desirable elements of Hose Service when you buy "YERDON'S" CAST BRASS HOSE BANDS.

Made of a Special, RUST-PROOF, composition metal, exceptionally strong and durable, they hold the hose firmly with a double, all-around "Grip" assuring a permanently tight connection. They can be used repeatedly and will be right on the job doing Efficient work long after others are scrapped and forgotten.

ALL sizes for hose ¾" O. D. up to the largest Suction Hose. Most satisfactory on automobile hose connections. Made in Fort Plain, U. S. A. Used everywhere. Unequalled by any.

We solicit your stock orders. If you don't know them write for samples. Both Home and Foreign trade supplied.

WILLIAM YERDON, Dept. C, Fort Plain, N. Y.

Seamless

A mark of quality on rubber goods since 1877

Rubber Druggists' Sundries
Rubber Toys and Novelties
Rubber Sporting Goods
Bathing Caps
Zinc Oxide Adhesive Plaster
Surgical Supplies
Surgeons' Gloves
Household Gloves
Industrial Gloves
Tubing
Nipples
Hard Rubber Combs

The Seamless Rubber Co., Inc.

NEW HAVEN, CONNECTICUT

Send for Catalogue

RUBBER BUYERS' DIRECTORY—Mechanical Rubber Goods, Druggists' and Stationers' Sundries.

Tubing.

(See Mechanical Rubber Goods.)

Acme Rubber Mfg. Co., Trenton, N. J.
American Hard Rubber Co., New York.
Archer Rubber Co., Milford, Mass.
Boston Belting Co., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Canfield Rubber Co., Bridgeport, Conn.
Cincinnati R. M. Co., Cincinnati, O.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Essex Rubber Co., Trenton, N. J.
Faultless Rubber Co., Ashland, Ohio.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., New York.
Hodgman Rubber Co., Tuckahoe, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia, Pa.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.
Voorhees Rubber Mfg Co., Jersey City, N. J.
Western Rubber Co., Goshen, Ind.
Whitall Tatum Co., New York.
Whitehead Bros. Rubber Co., Trenton, N. J.

Valve Discs.

American Hard Rubber Co., New York.
Boston Belting Co., Boston, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Canfield Rubber Co., Bridgeport, Conn.
Cincinnati R. M. Co., Cincinnati, O.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia, Pa.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

Valves.

(See Mechanical Rubber Goods.)

Boston Belting Co., Boston, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Canfield Rubber Co., Bridgeport, Conn.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Gutta Percha & Rubber Mfg. Co., New York.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

Valves—Continued.

Voorhees Rubber Mfg. Co., Jersey City, N. J.
Western Rubber Co., Goshen, Ind.
Whitehead Bros. Rubber Co., Trenton N. J.

Valves—Balata.

Boston Belting Co., Boston, Mass.

Valve Balls—Condensor, Cold and Hot Water.

Boston Belting Co., Boston, Mass.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia, Pa
Western Rubber Co., Goshen, Ind.

Vulcanized Emery Wheels.

Manhattan Rubber Mfg. Co., Passaic N. J.
New York Belting & Packing Co., New York. (Vulcanite.)
United States Rubber Co., New York.

Wringer Rolls.

Canadian Consolidated Rubber Co., Ltd. Montreal, Canada.
Cincinnati R. M. Co., Cincinnati, O.
Gutta Percha and Rubber, Limited Toronto.
New York Belting & Packing Co., N. Y
North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

DRUGGISTS' AND STATIONERS' SUNDRIES.

Atomizers. Nipples.
Bandages. Syringes.
Bulbs. Water Bottles

Druggists' Sundries, Generally

American Hard Rubber Co., New York.
Canadian Consolidated Rubber Co., Ltd Montreal, Canada.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Pirelli, Milan, Italy.
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York.
Vulcanized Rubber Co., New York.
Whitall Tatum Co., New York.

Air Goods.

Canadian Consolidated Rubber Co., Ltd Montreal, Canada.
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York.
Whitall Tatum Co., N. Y.

Air Goods—Valves for.

Schrader's, A., Son, Inc., New York.

Balloons (Toy).

Faultless Rubber Co., Ashland, Ohio.

Balls, Dolls and Toys.

Canadian Consolidated Rubber Co., Ltd., Montreal, Can.
Essex Rubber Co., Trenton, N. J.
Faultless Rubber Co., Ashland, Ohio.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.

Bathing Caps.

Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Canfield Rubber Co., Bridgeport, Conn.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
Hodgman Rubber Co., Tuckahoe, N. Y.
Kleinert, I. B., Rubber Co., The, New York.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Bulbs.

Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.
Whitall Tatum Co., New York.

Combination Fountain Syringe and Hot Water Bottle Fixtures.

Brass Goods Mfg. Co., Brooklyn, N. Y.
Davidson Rubber Co., Boston, Mass.
Schrader's, A., Son, Inc., New York.

Combs.

American Hard Rubber Co., New York.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Seamless Rubber Co., Inc., The, New Haven, Conn.
Vulcanized Rubber Co., New York.

Elastic Bands.

Davol Rubber Co., Providence, R. I.
Easthampton Rubber Thread Co., Easthampton, Mass.
Hodgman Rubber Co., Tuckahoe, N. Y.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Electricians' and Surgeons' Gloves.

Canadian Consolidated Rubber Co., Ltd. Montreal, Canada.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York.

Erasive Rubbers.

Faultless Rubber Co., Ashland, Ohio.
North British Rubber Co., Ltd., Edinburgh, Scotland.

Finger Cots.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.

Finger Cots—Continued

Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York.
Whitall Tatum Co., N. Y.

Fountain Syringes

Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

Gutta-Percha Tissue.

Peters Brothers Rubber Co., Inc., Brooklyn, N. Y.

Hard Rubber Goods.

American Hard Rubber Co., New York.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Davol Rubber Co., Providence, R. I.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Seamless Rubber Co., Inc., New Haven, Conn.
Stokes, Joseph, Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Vulcanized Rubber Co., New York.
White, S. S. Dental Mfg. Co., The Philadelphia, Pa.

Hard Rubber Syringe Fittings

Davidson Rubber Co., Boston, Mass.

Hospital Sheetings.

Archer Rubber Co., Milford, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Hale, Alfred, Rubber Co., Atlantic, Mass.
Hodgman Rubber Co., Tuckahoe, N. Y.
Kleinert, I. B., Rubber Co., The, New York.
Meade Rubber Co., Stoughton, Mass.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Plymouth Rubber Co., Inc., Canton, Mass.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.

Hot Water Bottle Stoppies.

Schrader's, A., Sons, Inc., New York.

Hot Water Bottles, Throat Bags, Ice Bags and Ice Bag Caps.

Brass Goods Mfg. Co., Brooklyn, N. Y.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio
Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Schrader's, A., Son, Inc., Brooklyn, N. Y.
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York.
Whitall Tatum Co., N. Y.

Life Preservers.

Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York.

Nipples.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.

For Complete Addresses See Advertisements—Index Page 108

The coolie who is the first laborer in the production of a tire can have no vision of the final destination of the latex he draws from the trees.

Similarly, the average motorist has little more conception of the involved processes that enter into the tire he buys.

But the motorist knows and demands that your trademark shall always stand for the same uniform quality.

Uniform quality is not possible without uniform pigments. The New Jersey Zinc Company's Zinc Oxide and Albalith have won their supremacy through their exceptional uniformity.

The world's Standard for zinc products

New Jersey zinc

The New Jersey Zinc Company

Established 1848

Products Distributed by

The New Jersey Zinc Sales Company

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RUBBER BUYERS' DIRECTORY—Druggists' and Stationers' Sundries, Mackintoshed and Surface Goods, Rubber Footwear, Dental and Stamp Rubber, Electrical.

Nipples—Continued.

North British Rubber Co., Ltd., Edinburgh, Scotland.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.
Waltall Tatum Co., N. Y.

Shower Bath Sprinklers.

Brass Goods Mfg. Co., Brooklyn, N. Y.
Davol Rubber Co., Providence.
Hodgman Rubber Co., Tuckahoe, N. Y.
Schrader's, A., Son, Inc., New York.
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York.

Sponges.

Faultless Rubber Co., Ashland, Ohio.
United States Rubber Co., New York.

Stationers' Sundries.

American Hard Rubber Co., New York.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Stoppers (Hard Rubber)

Davidson Rubber Co., Boston, Mass.

Stoppers (Metal)

Brass Goods Mfg. Co., Brooklyn, N. Y.
Schrader's, A., Son, Inc., New York.

Stoppers (Rubber)

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Canfield Rubber Co., Bridgeport, Conn.
Faultless Rubber Co., Ashland, Ohio.
Hodgman Rubber Co., Tuckahoe, N. Y.
New York Belting & Packing Co., N. Y.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Thread.

Easthampton Rubber Thread Co., Easthampton, Mass.
Mechanical Fabric Co., Providence, R. I.
United States Rubber Co., New York.

Tobacco Pouches.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York.

MACKINTOSHED AND SURFACE GOODS.

Adhesive Backing

Peters Brothers Rubber Co., Inc., Brooklyn, N. Y.

Airplane and Balloon Cloths.

North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York.

Air Mattresses.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York.

Aprons—Rubber.

Archer Rubber Co., Milford, Mass.
Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
Hodgman Rubber Co., Tuckahoe, N. Y.
Kleinert, I. B., Rubber Co., The, New York.
Schwarzwaelder Co., The, Philadelphia, Pa.

Aprons—Rubber—Continued.

United States Rubber Co., New York.

Bellows Cloths.

Archer Rubber Co., Milford, Mass.
Boston Belting Co., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Clifton Manufacturing Co., Boston, Mass.
Hodgman Rubber Co., Tuckahoe, N. Y.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

Bibs.

Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Canfield Rubber Co., Bridgeport, Conn.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
Kleinert, I. B., Rubber Co., The, New York.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Blankets—Camp and Hospital.

Archer Rubber Co., Milford, Mass.
Boston Belting Co., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Clifton Manufacturing Co., Boston, Mass.
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

Calendering.

Archer Rubber Co., Milford, Mass.
Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Canfield Rubber Co., Bridgeport, Conn.
Hodgman Rubber Co., Tuckahoe, N. Y.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

Carriage Ducks and Drills.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd. Montreal, Canada.
Clifton Manufacturing Co., Boston, Mass.
Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

Clothing and Mackintoshes.

Archer Rubber Co., Milford, Mass.
Badger Raincoat Co., Port Washington Wis.
Canadian Consolidated Rubber Co., Ltd. Montreal, Canada.
Clifton Mfg. Co., Boston, Mass.
Firestone-Apsley Rubber Co., Hudson Mass.
Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Miner Rubber Co., Ltd., The, Granby Quebec.
Pirelli, Milan, Italy.
United States Rubber Co., New York.

Dress Shield Material.

Archer Rubber Co., Milford, Mass.
Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Hodgman Rubber Co., Tuckahoe, N. Y.
Kleinert, I. B., Rubber Co., The, New York.
Plymouth Rubber Co., Inc., Canton, Mass
Schwarzwaelder Co., The, Philadelphia Pa.
United States Rubber Co., New York.

Diving Apparatus.

Hale, Alfred, Rubber Co., Boston, Mass
Hodgman Rubber Co., Tuckahoe, N. Y.
Schrader's, A., Son, Inc., Brooklyn.
United States Rubber Co., New York.

Horse Covers.

Canadian Consolidated Rubber Co., Ltd. Montreal, Canada
North British Rubber Co., Ltd., Edinburgh, Scotland.

Horse Cover Material.

United States Rubber Co., New York.

Leggings.

Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.

Piano Player Cloths.

Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

Ponchos.

Archer Rubber Co., Milford, Mass.
Clifton Manufacturing Co., Boston, Mass.
Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Schwarzwaelder Co., The, Philadelphia, Pa.
United States Rubber Co., New York.

Printing on Rubber Surface.

Archer Rubber Co., Milford, Mass.
Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Plymouth Rubber Co., Inc., Canton, Mass.

Proofing.

Archer Rubber Co., Milford, Mass.
Archer-Strauss Rubber Co., Framingham, Mass.
Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Canfield Rubber Co., Bridgeport, Conn.
Hale, Alfred, Rubber Co., Atlantic, Mass
Hodgman Rubber Co., Tuckahoe, N. Y.
Miner Rubber Co., Ltd., The, Granby, Quebec.
Plymouth Rubber Co., Inc., Canton, Mass.
Schwarzwaelder Co., The, Philadelphia, Pa.
Toledo Auto Fabrics Co., The, Toledo, Ohio.
United States Rubber Co., New York.

Rubber Coated Cloths.

Archer Rubber Co., Milford, Mass.
Archer-Strauss Rubber Co., Framingham, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Canadian Consolidated Rubber Co., Ltd. Montreal, Canada.
Clifton Manufacturing Co., Boston, Mass
Hale, Alfred Rubber Co., Atlantic, Mass.
Hodgman Rubber Co., Tuckahoe, N. Y.
Mechanical Fabric Co., Providence, R. I.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Plymouth Rubber Co., Inc., Canton, Mass.
Schwarzwaelder Co., The, Philadelphia, Pa.
Toledo Auto Fabrics Co., The, Toledo, Ohio.
United States Rubber Co., New York.

Stockinette Corset Materials.

Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Hodgman Rubber Co., Tuckahoe, N. Y.

Submarine Outfits.

Schrader's, A., Son, Inc., New York

Tape—Adhesive.

Peters Brothers Rubber Co., Inc., Brooklyn, N. Y.

RUBBER FOOTWEAR.

Boots and Shoes.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Firestone-Apsley Rubber Co., Hudson, Mass.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Miner Rubber Co., Granby, Quebec.
North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York.

Heels.

Meade Rubber Co., Stoughton, Mass.
Miner Rubber Co., Ltd., The, Granby, Quebec.
Plymouth Rubber Co., Inc., Canton, Mass.

Heels and Soles.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Canfield Rubber Co., Bridgeport, Conn.
Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Hale, Alfred, Rubber Co., Atlantic, Mass.
North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

Heel Burrs.

Sessions, J. H., & Son, Bristol, Conn.
Ward & Andre, Brockton, Mass.

Heel Nails.

United Shoe Machinery Corporation, Boston, Mass.

Shoe Findings and Specialties.

Clifton Manufacturing Co., Boston, Mass.
Essex Rubber Co., Trenton, N. J.
Meade Rubber Co., Stoughton, Mass.
United States Knitting Co., Pawtucket, Mass.
United States Rubber Co., New York.

Soles—Crêpe.

Hale, Alfred, Rubber Co., Atlantic, Mass.

Soling.

Boston Belting Co., Boston, Mass.
Gutta Percha & Rubber, Ltd., Toronto, Can.

Wading Pants.

Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Hale, Alfred, Rubber Co., Boston, Mass.
Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York.

DENTAL AND STAMP RUBBER.

Dental Gum.

North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York
White, S. S., Dental Mfg. Co., The, Philadelphia, Pa

Dentists' Sundries.

United States Rubber Co., New York.

Rubber Dam.

Brooklyn Shield & Rubber Co., Inc., Brooklyn, N. Y.
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York

Sponge Rubber.

Campbell, Charles E., Inc., Elmhurst, N. Y.
Faultless Rubber Co., Ashland, Ohio.
United States Rubber Co., New York.

Stamp Gum.

Gutta Percha & Rubber, Ltd., Toronto.
United States Rubber Co., New York.

ELECTRICAL.

Battery Sealing Compounds.

Robertson, H. H., Co., Pittsburgh, Pa.
Vanderbilt, R. T., New York, N. Y.

Electrical Supplies.

American Hard Rubber Co., New York.
Canfield Rubber Co., Bridgeport, Conn.
Stokes, Joseph, Rubber Co., Trenton, N. J.

For Complete Addresses See Advertisements—Index Page 108

MOLDS *for* RUBBER HEELS *and* SOLES

WITH OUR MODERN MACHINERY EQUIPMENT AND LABOR SAVING DEVICES, WE CAN QUOTE THE HEEL AND SOLE MANUFACTURER ATTRACTIVE PRICES.

Immediate Shipment.

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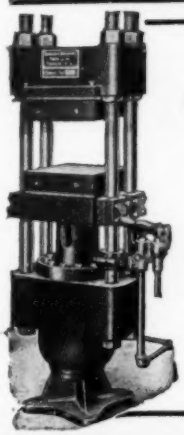

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For Bakelite Condensite Redmanol

and other Plastics. SEMI-AUTOMATIC or plain. Any size, any pressure. Also Accumulators, Pumps, Valves, Etc. Let us tell you more about them.

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Solvent Recovery Equipment

Simplicity with reliability. Nothing to get out of order. No moving parts. Each installation applicable to the individual unit. Efficiency guaranteed.

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Specialists in Molds for Tiling and All Types of Rubber Flooring

MOLDS FOR RUBBER HEELS

Also Molds for Mechanical Goods, Syringe Bags and Hot Water Bottles

Experimental and General Machine Work.

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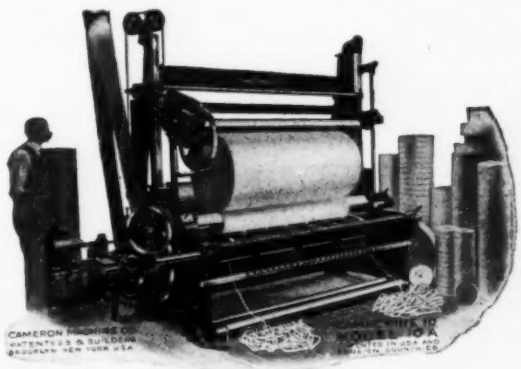
111 TRIBOU ST. BROCKTON, MASS.



CAMERON SLITTING AND ROLL-WINDING MACHINES

are built in a complete line of types and sizes to cover the needs of MANUFACTURERS of RUBBER GOODS (mechanical, surgical, electrical, etc.)

Special models for slitting into strip and winding rolls of FABRIC, PAPER, RUBBER COMPOSITIONS, TINFOIL, FELT, ASBESTOS, Etc.

CAMERON MACHINE COMPANY

61 Poplar Street Brooklyn, N. Y.

Colonial Porcelain Glove Forms

Are supplied to practically all manufacturers making dipped rubber goods. There is a reason for this.

Colonial Forms Do Not Craze

Original Designers of the Vitreous mould and forms as adopted by all manufacturers. Patentees of the closed end form.

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Established 1894 AKRON, OHIO

RUBBER BUYERS' DIRECTORY—Electrical, Sporting Goods, Rubber Tires and Accessories, Rubber Machinery.

Electrical Supplies—Continued.

United States Rubber Co., New York.
Vulcanized Rubber Co., New York.

Hard Rubber Goods.

American Hard Rubber Co., New York.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Canfield Rubber Co., Bridgeport, Conn.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Stokes, Joseph, Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Vulcanized Rubber Co., New York.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Insulating Compounds.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Canfield Rubber Co., Bridgeport, Conn.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Robertson, H. H., Co., Pittsburgh, Pa.
Tyson Bros., Inc., Woodbridge, N. J.

Insulated Wire and Cables.

Kerite Ins. Wire & Cable Co., N. Y.
Pirelli, Milan, Italy.
United States Rubber Co., New York.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Splicing Compounds.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Clifton Manufacturing Co., Boston, Mass.
Home Rubber Co., Trenton, N. J.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

Tape—Cloth Friction.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Canfield Rubber Co., Bridgeport, Conn.
Clifton Manufacturing Co., Boston, Mass.
Home Rubber Co., Trenton, N. J.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

Tape—Rubber Insulating.

Clifton Manufacturing Co., Boston, Mass.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

Wire—Rubber Insulated.

United States Rubber Co., New York.

Wire—Lead Covered.

United States Rubber Co., New York.

SPORTING GOODS.

Foot Balls.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Hodgman Rubber Co., Tuckahoe, N. Y.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.

Golf Balls.

Faultless Rubber Co., Ashland, Ohio.
North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York.

Sporting Goods.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Hodgman Rubber Co., Tuckahoe, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Pennsylvania Rubber Co., Jeannette, Pa.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Striking Bags.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Tennis Balls.

Faultless Rubber Co., Ashland, Ohio.
Pennsylvania Rubber Co., Jeannette, Pa.

RUBBER TIRES AND ACCESSORIES.

Accessories.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., Chicopee Falls, Mass.
General Tire & Rubber Co., Akron, Ohio.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City, N. J.

Auto Top Fabrics.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Hodgman Rubber Co., Tuckahoe, N. Y.
Lawrence & Co., New York.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Plymouth Rubber Co., Inc., Canton, Mass.
Taylor, Armitage & Eagles, Inc., N. Y.
Toledo Auto Fabrics Co., The, Toledo, Ohio.
United States Rubber Co., New York.

Bead Braid (Wire).

National-Standard Co., Niles, Mich.

Inner Tubes.

Acme Rubber Mfg. Co., Trenton, N. J.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., The, Chicopee Falls, Mass.
General Tire & Rubber Co., Akron, Ohio.
Gutta Percha & Rubber, Ltd., Toronto.
Hewitt Rubber Co., Buffalo, N. Y.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Pennsylvania Rubber Co., Jeannette, Pa.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.
Voorhees Rubber Mfg. Co., Jersey City, N. J.

Mats—Automobile.

(See Matting and Mechanical Rubber Goods.)

Repair Stock.

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., New York.
General Tire & Rubber Co., Akron, Ohio.
Miller, Chas. E., Anderson, Ind.
United States Rubber Co., New York.

Tires (Airplanes).

North British Rubber Co., Ltd., Edinburgh, Scotland.

Tires (Auto).

Acme Rubber Mfg. Co., Trenton, N. J.
Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., Chicopee Falls, Mass.
General Tire & Rubber Co., Akron, Ohio.
Gutta Percha & Rubber, Ltd., Toronto.
Hewitt Rubber Co., Buffalo, N. Y.
Miller, Chas. E., Anderson, Ind.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Pennsylvania Rubber Co., Jeannette, Pa.
Pirelli, Milan, Italy.
Quaker City Rubber Co., Philadelphia, Pa.
Thermoid Rubber Co., Trenton, N. J.
United States Rubber Co., New York.

Tires—Baby Carriage.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

Tires (Bicycle).

Fisk Rubber Co., Chicopee Falls, Mass.
Miller, Chas. E., Anderson, Ind.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Pennsylvania Rubber Co., Jeannette, Pa.

Tires (Motorcycle).

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., Chicopee Falls, Mass.
Miller, Chas. E., Anderson, Ind.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Pennsylvania Rubber Co., Jeannette, Pa.

Tires (Solid).

Canadian Consolidated Rubber Co., Ltd., Montreal, Can.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., Chicopee Falls, Mass.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
North British Rubber Co., Ltd., Edinburgh, Scotland.
United States Rubber Co., New York.

Tire Fabrics (See Cotton Goods in Raw Materials and Supplies).

Tire Repair Materials.

Essex Rubber Co., Trenton, N. J.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., Chicopee Falls, Mass.
Miller, Chas. E., Anderson, Ind.
Voorhees Rubber Mfg. Co., Jersey City, N. J.

Valves, Tire.

Schrader's, A., Sons, Inc., New York.

Wire Bead Braids (Flat).

National-Standard Co., Niles, Mich.

RUBBER MACHINERY.

Accumulators—Hydraulic.

Adamson Machine Co., The, Akron, O.
Akron Equipment Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Burroughs Co., The, Newark, N. J.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Farquhar, A. B., Co., Ltd., York, Pa.
Farrel F. & M. Co., Ansonia, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Thropp's John E., Sons Co., Trenton, N. J.
Watson-Stillman Co., The, New York.
Williams F. & M. Co., Akron, Ohio.

Acid Tanks.

Buffalo Foundry & Machine Co., Buffalo, N. Y.
Devine, J. P., Co., Buffalo, N. Y.

Air Bags

Miller, Charles E., Anderson, Ind.

Air Compressors.

Miller, Chas. E., Anderson, Ind.
Williams F. & M. Co., Akron, Ohio.

Band Cutting Machines.

Adamson Machine Co., The, Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Utility Manufacturing Co., Cudahy, Wis.

Barometers, Hydrometers and Pyrometers.

American Schaeffer & Budenberg Corp., Brooklyn, N. Y.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

For Complete Addresses See Advertisements—Index Page 108

DRYERS AND WATER SEPARATORS

FOR

RECLAIMED RUBBER

PRODUCES HIGHER GRADE MATERIAL
AT LOWER COST AND MORE EFFICIENT.

Material Carried in Stock for Standard Sizes

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J. Frank Dunbar Co., Inc.
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NEW YORK CITY

Crude Rubber and Allied Gums

603 Flat Iron Bldg. AKRON, OHIO

STUART TWO PRESSURE Operating Valves

Our type "B" Stuart Two Pressure Operating Valve illustrated consists essentially of a low pressure valve, a high pressure valve, an exhaust valve and a check valve. The check valve is of the leather faced lift type, while all other valves are of the piston type packed with rings of hydraulic duck packing.

All packers may be quickly and cheaply renewed when worn out

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OUR SERVICE YOUR SUCCESS
THE P. E. WELTON ENGINEERING CO.
46 S. BROADWAY AKRON, OHIO

Successors to
THE AKRON ENGINEERING CO.

Rubber Factory and Power Plant Specialists.
We Can Solve Your Annoying Problems.
Can Sell, Lease, Build, Equip and Operate
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SPECIALISTS IN TIRE MOLD DESIGNS.
LET US PROVE IT.

THE WELLMAN COMPANY

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AND

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for cutting soles, taps and other irregular shapes at any bevel from 27° to 90° from sheet stock. They are also in a position to work out many of your engineering problems, to design and build any tool or light machine needed in your factory.

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HEELS, SOLES, TILING AND OTHER MECHANICAL RUBBER GOODS

Liberal Working Samples Supplied

CLAREMONT WASTE MFG. CO.
CLAREMONT, DEPT. I NEW HAMPSHIRE

RUBBER BUYERS' DIRECTORY—Rubber Machinery.

Bead Flippers.
Utility Manufacturing Co., Cudahy, Wis.

Bead Presses.
Allen Machine Co., Erie, Pa.
Farrel Foundry & Machine Co., Ansonia, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Williams Foundry & Machine Co., The, Akron, Ohio.

Bead Trimmers.
Banner Machine Co., The, Columbiana, Ohio.

Belt Folding Machines.
Birmingham Iron Foundry, Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.

Belt Slitters.
Birmingham Iron Foundry, Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.

Belt Stretchers.
Birmingham Iron Foundry, Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.

Bias Cutters.
Birmingham Iron Foundry, Derby, Conn.
Spadone Machine Co., Inc., New York.

Blanking Rolls.
Burroughs Co., The, Newark, N. J.

Boilers.
Farquhar, A. B., Co., Ltd., York, Pa.
Scripps, John E., Sons Co., Trenton, N. J.
Thropp, William R., Sons' Co., Trenton, N. J.

Braiders, Hose.
New England Butt Co., Providence, R. I.

Brushing Machines and Brushes.
Curtis & Marble Mach. Co., Worcester, Mass.

Brass Fittings.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Schrader's, A., Son, Inc., New York.

Buffing Machines.
Banner Machine Co., The, Columbiana, Ohio.
Williams Foundry & Machine Co., The, Akron, Ohio.

Burrs—Light Steel for Rubber Heels.
Sessions, J. H., & Son, Bristol, Conn.
Ward & Andre, Brockton, Mass.

Calenders.
Adamson Machine Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Black Rock Mfg. Co., Bridgeport, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Calenders—Brake Lining.
Allen Machine Co., Erie, Pa.
Black Rock Mfg. Co., The, Bridgeport, Conn.

Calender Screw-Down — Motor Driven.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
Farrel Foundry & Machine Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Castings.
Adamson Machine Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Birmingham Iron Foundry, Derby, Conn.
Buffalo Foundry & Machine Co., Buffalo, N. Y.

Castings—Continued.
De Mattia Bros., Garfield, N. J.
Farquhar, A. B., Co., Ltd., York, Pa.
Farrel F. & M. Co., Ansonia, Conn.
Poole Engineering & Machine Co., Baltimore, Md.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.
Williams F. & M. Co., Akron, Ohio.

Cell Dryers
Butterworth, H. W., & Sons Co., Philadelphia, Pa.

Chemical Plants.
Buffalo Foundry & Machine Co., Buffalo, N. Y.
Devine, J. P., Co., Buffalo, N. Y.

Chucks—Lathe and Drill.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

Churns and Cement Making Machines.
Day Co., J. H., Cincinnati, Ohio.
East Iron & Machine Co., The, Lima, Ohio.
Miller, Chas. E., Anderson, Ind.

Cloth Dryers.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Birmingham Iron Fdry., Derby, Conn.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.
Farrel F. & M. Co., Ansonia, Conn.
Textile-Finishing Machinery Co., Providence, R. I.

Clutch Brakes—Pneumatic.
Birmingham Iron Foundry, Derby, Conn.

Clutches—Friction.
Allen Machine Co., Erie, Pa.
Birmingham Iron Fdry., Derby, Conn.
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
Farrel F. & M. Co., Ansonia, Conn.
Johnson, Carlyle, Machine Co., The, Manchester, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.
Williams F. & M. Co., Akron, Ohio.

Combustion Recorders.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

Condensers.
Buffalo Fdy. & Mach. Co., Buffalo, N. Y.

Controllers—Electrical.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Controllers—Temperature-Pressure.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

Counters.
American Schaeffer & Budenberg Corp., Brooklyn, N. Y.

Couplings.
Allen Machine Co., Erie, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis
Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia, Conn.

Couplings—Flexible and Rigid
Allis-Chalmers Mfg. Co., Milwaukee, Wis
Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia, Conn.

Crackers.
Adamson Machine Co., The, Akron, Ohio
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn
Farrel F. & M. Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Cranes.
Allis-Chalmers Mfg. Co., Milwaukee, Wis
Southwark Foundry & Machine Co., Philadelphia, Pa.

Cranes—Hydraulic.
Watson-Stillman Co., The, New York.

Cutters—Scrap.
Taylor, Stiles & Co., Riegelsville, N. J.

Cutters—Tire Section.
Adamson Machine Co., The, Akron, Ohio.
Banner Machine Co., Columbiana, Ohio.

Devulcanizers.
Biggs Boiler Works Co., The, Akron, O.

Die Sinking and Engraving.
Burroughs Co., The, Newark, N. J.
College Point Mold & Machine Co., College Point, L. I., N. Y.

Die Blocks.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.

Dies.
Akron Equipment Co., The, Akron, O.
Akron Machine, Mold, Tool & Die Co., Akron, Ohio.
Burroughs Co., The, Newark, N. J.
College Point Mold & Machine Co., College Point, L. I., N. Y.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Housatonic Mach. & Tool Co., Bridgeport, Conn.
Kuhn & Jacob Machine & Tool Co., Trenton, N. J.
Mechanical Mold & Machine Co., The, Akron, Ohio.
Terkelsen Machine Co., Boston, Mass.
Ward & Andre, Brockton, Mass.
Williams F. & M. Co., Akron, Ohio.

Dipped Goods Forms (Porcelain).
Colonial Insulator Co., The, Akron, Ohio.
Seville Porcelain Co., Seville, Ohio.

Doubling Machines.
Birmingham Iron Fdry., Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.

Draft Gages.
American Schaeffer & Budenberg Corp., Brooklyn, N. Y.

Drives—Mill
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia, Conn.
Fawcus Machine Co., Pittsburgh, Pa.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Dryers—Vacuum.
Buffalo Fdy. & Mach. Co., Buffalo, N. Y.

Drying and Processing.
Carrier Engineering Corp. Newark N. J

Drying Machines.
Allen Machine Co., Erie, Pa.
American Process Co., New York.
Birmingham Iron Foundry, Derby, Conn.
Buffalo Foundry & Machine Co., Buffalo, N. Y.
Carrier Engineering Corp. Newark N. J.
Farrel F. & M. Co., Ansonia, Conn.
Textile-Finishing Machinery Co., Providence, R. I.

Duck Slitters.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.

Durometers.
Shore Instrument & Mfg. Co The, Jamaica, N. Y.

Electrical Safety Switches.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Embossing Calenders.
Allen Machine Co., Erie, Pa.
Birmingham Iron Fdry., Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Textile-Finishing Machinery Co., Providence, R. I.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Engineering Devices.
Yarnall-Waring Co., Philadelphia, Pa.

Engines—Steam.
Farquhar, A. B., Co., Ltd., York, Pa.
Thropp's, John E., Sons Co., Trenton, N. J.
Thropp, William R., Sons' Co., Trenton, N. J.

Engraving Rolls.
Birmingham Iron Fdry., Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

Engraving—Tire Molds.
Akron Equipment Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
De Mattia Bros., Garfield, N. J.
Williams Foundry & Machine Co., The, Akron, Ohio.

Evaporators.
Buffalo Foundry & Machine Co., Buffalo, New York.
Devine, J. P., Co., Buffalo, N. Y.

Eyeletting Machines.
United Shoe Machinery Corporation, Boston, Mass.

Fittings.
Utility Manufacturing Co., Cudahy, Wis.

Fittings—Hydraulic Pipe.
Watson-Stillman Co., The, New York.

Gages.
American Schaeffer & Budenberg Corp., Brooklyn, N. Y.
Bristol Co., The, Waterbury, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

Gages—Thickness.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Randall, Frank E., Waltham, Mass.

Gear Cutting.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.
Fawcus Machine Co., Pittsburgh, Pa.
Poole Engineering & Machine Co., Baltimore, Md.

Gears.
Spring.
Silent Chain.
Compensating.
Allen Machine Co., Erie, Pa.
Farrel Foundry & Machine Co., Ansonia, Conn.
Fawcus Machine Co., Pittsburgh, Pa.
Poole Engineering & Machine Co., Baltimore, Md.

Gears—Helical.
Farrel Foundry & Machine Co., Ansonia, Conn.
Poole Engineering & Machine Co., Baltimore, Md.

Gears-Herringbone.
Birmingham Iron Foundry, Derby, Conn.
Falk Corp., The, Milwaukee, Wis.
Farrel Foundry & Machine Co., Ansonia, Conn.

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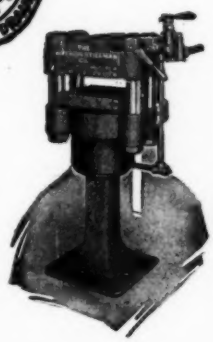

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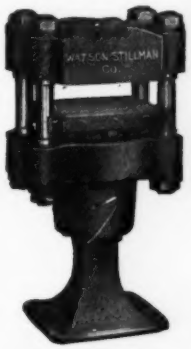

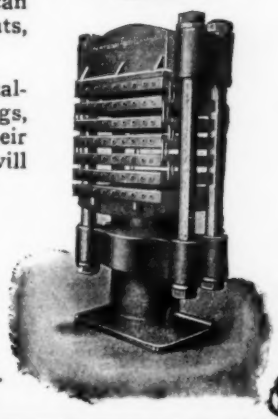

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Gears—Reduction.

Allen Machine Co., Erie, Pa.
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Cleveland Worm & Gear Co. The Cleveland, Ohio.
Farrel Foundry & Machine Co., Ansonia, Conn.
Fawcus Machine Co., Pittsburgh, Pa.
Poole Engineering & Machine Co., Baltimore, Md.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Gears—Worm

Cleveland Worm & Gear Co., The, Cleveland, Ohio.
Poole Engineering & Machine Co., Baltimore, Md.

Grinders—See Mixers. Hangers.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Birmingham Iron Fdry., Derby, Conn.
Fawcus Machine Co., Pittsburgh, Pa.
Farrel F. & M. Co., Ansonia, Conn.

Heater Presses.

Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Williams Foundry & Machine Co., The, Akron, Ohio.

Hoists.

Utility Mfg. Co., Cudahy, Wis.

Hoists—Hydraulic.

Watson-Stillman Co., The, New York.

Hose Machines.

Banner Machine Co., The, Columbiana, Ohio.
Birmingham Iron Foundry, Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
New England Butt Co., Providence, R. I.

Hose Covering Take-Up Reels.

H. Monroe Smith, Passaic, N. J.

Hose Wiring Machines.

Adamson Machine Co., The, Akron, Ohio.

Hydraulic Valves.

Birmingham Iron Foundry, Derby, Conn.
Manning & Boschert Press Co., Inc., The, Syracuse, N. Y.
Pittsburgh Valve Foundry & Construction Co., Pittsburgh, Pa.
Tarnall-Waring Co., Philadelphia, Pa.

Insulating Machinery

Adamson Machine Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Biggs Boiler Works Co., The, Akron, Ohio.
Farrel Foundry & Machine Co., Ansonia, Conn.
Housatonic Machine & Tool Co., Bridgeport, Conn.
New England Butt Co., Providence, R. I.
Doyle, John, & Sons, Paterson, N. J.

Jar Ring and Washer Cutting Machines.

Black Rock Mfg. Co., Bridgeport, Conn.

Laboratory Apparatus.

Allen Machine Co., Erie, Pa.
American Schaeffer & Budenberg Corp., Brooklyn, N. Y.
Banner Machine Co., The, Columbiana, Ohio.
Bristol Co., The, Waterbury, Conn.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

Laboratory Machinery.

Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Biggs Boiler Works Co., The, Akron, Ohio.
Birmingham Iron Foundry, Derby, Conn.
Buffalo Foundry & Machine Co., Buffalo, N. Y.
Devine, J. P., Co., Buffalo, N. Y.
Farrel Foundry & Machine Co., Ansonia, Conn.
Shaw, Francis, & Co., Limited, Manchester, England.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Lathes—Hard Rubber.

Adamson Machine Co., The, Akron, O.

Lathes—Jar Ring.

Adamson Machine Co., The, Akron, O.
Thropp's, John E., Sons Co., Trenton, N. J.
Thropp, William R., Sons' Co., Trenton, N. J.

Lead Press Take-Up Reels.

H. Monroe Smith, Passaic, N. J.

Locomotive Cranes.

Utility Manufacturing Co., Cudahy, Wis.

Machinery, Transmission (Power).

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Machinists' Tools.

Hoggson & Pettis Mfg. Co., New Haven, Conn.

Magnetic Clutches and Brakes.

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
Farrel Foundry & Machine Co., Ansonia, Conn.

Mandrels—Circular.

Lowe, Clyde E., Co., Cleveland, Ohio.

Mandrels—Tube Splicing.

Williams Foundry & Machine Co., The, Akron, Ohio.

Mandrels—Sherardizing.

Biggs Boiler Works Co., The, Akron, O.
New Haven Sherardising Co., New Haven, Conn.

Masticators.

Birmingham Iron Foundry, Derby, Conn
East Iron & Machine Co., The, Lima Ohio.
Farrel Foundry & Machine Co., Ansonia, Conn.

Measuring Rolls.

Curtis & Marble Mach. Co., Worcester Mass.

Mixers.

Adamson Machine Co., The, Akron, Ohio
Allen Machine Co., Erie, Pa.
Biggs Boiler Works Co., The, Akron Ohio.
Birmingham Iron Foundry, Derby, Conn
Day, J. H., Co., Cincinnati, Ohio.
East Iron & Machine Co., The, Lima Ohio.
Farrel Foundry & Machine Co., Ansonia Conn.
Miller, Chas. E., Anderson, Ind.
Thropp's, John E., Sons Co., Trenton N. J.
Thropp, William R., Sons' Co., Trenton N. J.
Vaughn Machinery Co., Cuyahoga Falls Ohio.

Mixers—Automatic.

Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia Conn.

Molds.

Adamson Machine Co., The, Akron, O.
Akron Equipment Co., The, Akron, Ohio
Akron Machine, Mold, Tool & Die Co. Akron, Ohio.
Akron Rubber Mold and Machine Co. Akron, Ohio.
Akron Standard Mold Co., Akron, Ohio.
Banner Machine Co., The, Columbiana Ohio.
Birmingham Iron Foundry, Derby, Conn.
Brockton Machine Co., Brockton, Mass.
Brockton Tool Co., Brockton, Mass.
Burroughs Co., The, Newark, N. J.
College Point Mold & Machine Co., College Point, L. I., N. Y.
De Mattia Bros., Garfield, N. J.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Hohwieler Machine & Engineering Co., Morrisville, Pa.
Housatonic Mach. & Tool Co., Bridgeport, Conn.
Kubike Machine Co., Akron, Ohio.

Molds—Continued.

Kuhn & Jacob Machine & Tool Co., Trenton, N. J.
Mahlow & Wyckoff, Trenton, N. J.
Mechanical Mold & Machine Co., The, Akron, Ohio.
Miller, Chas. E., Anderson, Ind.
Reynolds Machine Co., The, Massillon, Ohio.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Terkelsen Machine Co., Boston, Mass.
Thropp's, John E., Sons Co., Trenton, N. J.
Ward & Andre, Brockton, Mass.
Williams Foundry & Machine Co., Akron, O.

Molds—Engraving.

Banner Machine Co., The, Columbiana, Ohio.
De Mattia Bros., Garfield, N. J.
Reynolds Machine Co., The, Massillon, Ohio.
Williams Foundry & Machine Co., The, Akron, Ohio.

Molds—Heels and Soles.

Akron Machine, Mold, Tool & Die Co., Akron, Ohio.
Brockton Machine Co., Brockton, Mass.
Brockton Tool Co., Brockton, Mass.
College Point Mold & Machine Co., College Point, L. I., N. Y.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Kuhn & Jacob Machine & Tool Co., Trenton, N. J.
Mechanical Mold & Machine Co., Akron, Ohio.
Terkelsen Machine Co., Boston, Mass.
Wade, Levi C., Lynn, Mass.
Ward & Andre, Brockton, Mass.

Molds—Druggists' Sundries.

Akron Machine, Mold, Tool & Die Co., Akron, Ohio.
College Point Mold & Machine Co., College Point, L. I., N. Y.
Brockton Machine Co., Brockton, Mass.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Hohwieler Machine & Engineering Co., Morrisville, Pa.
Kuhn & Jacob Machine & Tool Co., Trenton, N. J.
Mechanical Mold & Machine Co., Akron, Ohio.

Molds—Mechanical Rubber Goods.

Adamson Machine Co., Akron, Ohio.
Akron Machine, Mold, Tool & Die Co., Akron, Ohio.
Brockton Machine Co., Brockton, Mass.
College Point Mold & Machine Co., College Point, L. I., N. Y.
Kuhn & Jacob Machine & Tool Co., Trenton, N. J.
Mechanical Mold & Machine Co., Akron, Ohio.
Terkelsen Machine Co., Boston, Mass.
Wade, Levi C., Lynn, Mass.

Molds and Cores—Tires.

Adamson Machine Co., The, Akron, O.
Akron Equipment Co., Akron, Ohio.
Akron Machine, Mold, Tool & Die Co., Akron, Ohio.
Akron Rubber Mold & Machine Co., Akron, O.
Akron Standard Mold Co., Akron, Ohio.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
De Mattia Bros., Garfield, N. J.
Franz Foundry & Machine Co., Akron, Ohio.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Kubike Machine Co., Akron, Ohio.
Mahlow & Wyckoff, Trenton, N. J.
Miller, Charles E., Anderson, Ind.
Reynolds Machine Co., The, Massillon, Ohio.
Thropp's, John E., Sons Co., Trenton, N. J.
Williams Foundry & Machine Co., Akron, Ohio.

Motors.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Oil Testing Instruments.

Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

Painting Machines.

Utility Manufacturing Co., Cudahy, Wis.

Pattern Makers.

Adamson Machine Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Buffalo Foundry & Machine Co., Buffalo, N. Y.
Farrel Foundry & Machine Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Pillow Blocks.

Adamson Machine Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Birmingham Iron Fdry., Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Pipe Joints.

Diamond Metal Products Co., St. Louis, Mo.
Currier Loomis Co., New York.
Flexo Supply Co., St. Louis, Mo.

Plantation Machinery.

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.
Shaw, Francis, & Co., Ltd., Manchester, Eng.

Presses—Packing.

Black Rock Mfg. Co., The, Bridgeport, Conn.

Presses—Rimming.

Adamson Machine Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.

Presses—Tiling.

Utility Manufacturing Co., Cudahy, Wis.

Presses—Vulcanizing.

Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, O.
Akron Rubber Mold & Machine Co., Akron, Ohio.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Burroughs Co., The, Newark, N. J.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Farquhar, A. B., Co., Ltd., York, Pa.
Farrel F. & M. Co., Ansonia, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Thropp's, John E., Sons Co., Trenton, N. J.
Thropp, William R., Sons' Co., Trenton, N. J.
Utility Manufacturing Co., Cudahy, Wis.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.
Watson-Stillman Co., The, New York.
Williams Foundry & Machine Co., Akron, O.

Pumps.

Adamson Machine Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Buffalo Foundry & Machine Co., Buffalo, N. Y.
Burroughs Co., The, Newark, N. J.
Devine, J. P., Co., Buffalo, N. Y.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Farquhar, A. B., Co., Ltd., York, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Watson-Stillman Co., The, New York.

Pumps—Centrifugal.

Southwark Foundry & Machine Co., Philadelphia, Pa.

Pumps—Vacuum.

Buffalo Fdy. & Mach. Co., Buffalo, N. Y.
Devine, J. P., Co., Buffalo, N. Y.

Racks and Frames.

Hoggson & Pettis Mfg. Co., New Haven, Conn.

Reclaiming Machinery.

Adamson Machine Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
American Process Co., New York.
Biggs Boiler Works Co., The, Akron, Ohio.
Birmingham Iron Foundry, Derby, Conn.
Buffalo Fdy. & Mach. Co., Buffalo, N. Y.
Devine, J. P., Co., Buffalo, N. Y.
Farrel F. & M. Co., Ansonia, Conn.

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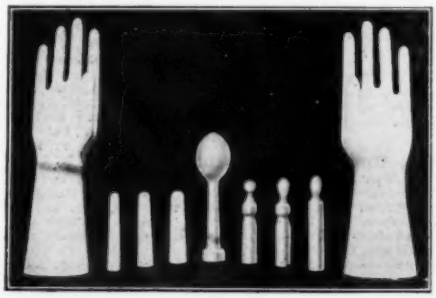

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ARTHUR JACKSON WILLS PATENTS

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A STANDARD OVERFLOW
TRIMMER
for
Heels, Soles, Automotive Rubber, Plumbing Supplies, Packing, Mats, Discs and various Mechanical Rubber articles.

ARTHUR JACKSON WILLS COMPANY
North Brookfield, Mass., U. S. A.

SUPERFINE SULPHUR

Specially prepared to meet the requirements of rubber manufacturers

Refined Flour Sulphur, 100% Pure. **Commercial Flour Sulphur, 99½% Pure.**

BOTH ARE UNEXCELLED IN FINENESS AND UNIFORMITY

Write for Samples, Prices and Pamphlet, "Real Facts About Sulphur"

SOUTHERN ACID & SULPHUR CO.

Complete Stock of Rubbermakers' Sulphur Carried in Akron

Rialto Building, St. Louis, Mo.

Akron Agent:
C. P. HALL CO.
Central Savings and Trust Bldg.
Akron, Ohio

RUBBER BUYERS' DIRECTORY — Rubber Machinery.

Reclaiming Machinery—Cont'd.
Housatonic M. & T. Co., Bridgeport, Conn.
Taylor, Stiles & Co., Riegelsville, N. J.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Reclaiming Water Separators.
American Process Co., New York City.
Buffalo Foundry & Machine Co., Buffalo, N. Y.
Devine, J. P., Co., Buffalo, N. Y.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Recording Instruments.
For Pressure and Temperature.
American Schaeffer & Budenberg Corp., Brooklyn, N. Y.
Bristol Co., The, Waterbury, Conn.
Kendall, Frank E., Waltham, Mass.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.
Yarnall-Waring Co., Philadelphia, Pa.

Refiners.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Repair Equipment for Rubber Footwear.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Miller, Chas. E., Anderson, Ind.

Riveters.
Watson-Stillman Co., The, New York.

Rivets.
Sessions, J. H., & Son, Bristol, Conn.

Rollers and Stitchers—Hand.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Miller, Chas. E., Anderson, Ind.
Wellman Co., Medford, Mass.

Rolls—Chilled.
Akron Rubber Mold & Machine Co., Akron, Ohio.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Curtis & Marble Mch. Co., Worcester, Mass.
Farrel Foundry & Machine Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Rubber Covering Machines.
New England Butt Co., Providence, R. I.

Rubber Scrap Cutters.
Taylor, Stiles & Co., Riegelsville, N. J.

Scleroscopes.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

Sewing Machines.
Curtis & Marble Mch. Co., Worcester, Mass.

Shafting.
Adamson Machine Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
Birmingham Iron Fdry., Derby, Conn.

Shafting—Continued.
Farrel F. & M. Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Sheet Metal Specialties
Brass Goods Mfg. Co., Brooklyn, N. Y.

Sherardizing.
New Haven Sherardizing Co., New Haven, Conn.

Shoe Cars and Sticks.
Birmingham Iron Foundry, Derby, Conn.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.

Sifters—Dry.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Day, J. H. Co., Cincinnati, Ohio.

Skiving Machines.
Allen Machine Co., Erie, Pa.
United Shoe Machinery Corporation, Boston, Mass.

Slitting and Re-Winding Machines.
Cameron Machine Co., Brooklyn, N. Y.

Solvent Recovery Apparatus.
Benzine Condensation Co., New York.
Buffalo Foundry & Machine Co., Buffalo, N. Y.
Devine, J. P., Co., Buffalo, N. Y.

Sole Cutting Machines
Wellman Co., Medford, Mass.

Special Machinery.
Akron Equipment Co., The, Akron, O.
Akron Machine, Mold, Tool & Die Co., Akron, Ohio.
Akron Rubber Mold & Mach. Co., Akron, Ohio.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Biggs Boiler Works Co., The, Akron, Ohio.
Birmingham Iron Foundry, Derby, Conn.
Black Rock Mfg. Co., Bridgeport, Conn.
De Mattia Bros., Garfield, N. J.
Farquhar, A. B., Co., Ltd., York, Pa.
Farrel Foundry & Machine Co., Ansonia, Conn.
Frans Foundry & Machine Co., Akron, Ohio.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Kuhlke Machine Co., Akron, Ohio.
Smith, H. Monroe, Passaic, N. J.
Terkelsen Machine Co., Boston, Mass.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.
Williams Foundry & Machine Co., The, Akron, Ohio.
Wills, Arthur Jackson, North Brookfield, Mass.

Spreaders.
Adamson Machine Co., The, Akron, Ohio.
Banner Machine Co., The, Columbiana, Ohio.
Birmingham Iron Foundry, Derby, Conn.
New England Butt Co., Providence, R. I.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Sprockets.
Spring Silent Chain. Compensating.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.

Steel Stampings.
Sessions, J. H., & Son, Bristol, Conn.

Steel Stamps.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Wellman Co., Medford, Mass.

Stitchers.
Akron Rubber Mold & Machine Co., Akron, Ohio.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

Stock Shells.
Gammeter, W. F., Co., The, Cadiz, Ohio.

Strip Cutters.
Birmingham Iron Foundry, Derby, Conn.
Cameron Machine Co., Brooklyn, N. Y.
New England Butt Co., Providence, R. I.
Spadone Machine Co., Inc., New York.

Stripping Tables.
Akron Standard Mold Co., Akron, Ohio.
Banner Machine Co., The, Columbiana, Ohio.
Williams Foundry & Machine Co., The, Akron, Ohio.

Swing Joints.
Adamson Machine Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
Currier-Loomis Co., New York.
Diamond Metal Products Co., St. Louis, Mo.
Flexo Supply Co., St. Louis, Mo.
Williams, Franklin, Inc., New York.

Tachometers.
American Schaeffer & Budenberg Corp., Brooklyn, N. Y.
Schaeffer & Budenberg Mfg. Co., The, Brooklyn, N. Y.

Tanks, Storage—Oil and Gasoline.
Biggs Boiler Works Co., Akron, Ohio.
Farquhar, A. B., Co., Ltd., York, Pa.

Testing Machines.
Perkins, B. F., & Son, Inc., Holyoke, Mass.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

Thermometers.
American Schaeffer & Budenberg Corp., Brooklyn, N. Y.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

Tire Building Equipment.
Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, O.
Akron Rubber Mold & Machine Co., Akron, Ohio.
Akron Standard Mold Co., Akron, Ohio.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Birmingham Iron Fdy., Derby, Conn.
De Mattia Bros., Inc., Garfield, N. J.

Tire Building Equipment—Con't.
Hermann Tire Building Machine Co., The, Lancaster, Ohio.
Thropp's, John E., Sons So., The, Trenton, N. J.
Williams Fdy. & Mach. Co., Akron, O.

Tire Building Machines.
Banner Machine Co., The, Columbiana, Ohio.
Hermann Tire Building Machine Co., The, Lancaster, Ohio.
Thropp's, John E., Sons Co., The, Trenton, N. J.

Tire Building Stands.
Banner Machine Co., The, Columbiana, Ohio.
De Mattia Bros., Garfield, N. J.
Williams Foundry & Machine Co., The, Akron, Ohio.

Tire Lasts.
Miller, Chas. E., Anderson, Ind.
Williams Foundry & Machine Co., The, Akron, Ohio.

Tire Machine Drums.
Gammeter, W. F., Co., The, Cadiz, Ohio.

Tire Presses.
Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Miller, Chas. E., Anderson, Ind.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Watson-Stillman Co., The, New York.
Williams Foundry & Machine Co., The, Akron, Ohio.

Tire Rebuilding and Repair Equipment.
Akron Rubber Mold & Mach. Co., The, Akron, O.
Biggs Boiler Works Co., The, Akron, O.
Frans Foundry & Machine Co., Akron, Ohio.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Miller, Chas. E., Anderson, Ind.
Williams, F. & M. Co., Akron, Ohio.

Tire Vulcanizing Presses.
The Adamson Machine Co., Akron, O.
Akron Equipment Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Williams, F. & M. Co., Akron, Ohio.

Tire Wrapping Machines.
Adamson Machine Co., The, Akron, Ohio.
Akron Standard Mold Co., Akron, Ohio.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Miller, Chas. E., Anderson, Ind.
Terkelsen Machine Co., Boston, Mass.
Thropp's, John E., Sons Co., Trenton, N. J.

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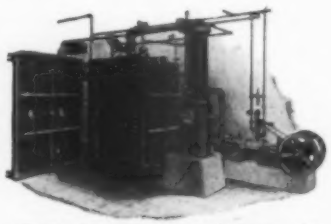

"Buflovak" Vacuum Shelf Dryer with Condenser and Vacuum Pump

Vacuum Dryers, Evaporators, Chemical Apparatus, Distillation Apparatus, Copper Equipment.

STRENGTH AND RESILIENCY IN VACUUM DRIED RUBBER

The extremely low temperature and high vacuum at which rubber is dried in "Buflovak" Vacuum Dryers absolutely prevent overheating and oxidation. Consequently there is no risk of impairing the natural resiliency and strength of the rubber. Other advantages are economy of time and reduced labor costs.

"Buflovak" Dryers dry all kinds of sheet rubber, reclaimed rubber, rubber compounds, etc.

Buffalo Foundry & Machine Company

1577 Fillmore Ave., Buffalo, N. Y. New York Office, 17 Battery Place

THE CONSULTING COMPANY

2802 Union Central Building, Cincinnati

Will furnish plans and specifications for your building.
Advise as to machinery and equipment needed.
Supply complete layout of plant.
Superintend entire work of construction.
Mechanical ability of our experts is of the highest order.
Practical knowledge of Rubber manufacturing.

THE CONSULTING COMPANY.

ARCHER RUBBER CO.

Manufacturers

Royal Archer Lines

Piano and Organ Cloths
Rubber Tubings
Hospital Sheetings and Blankets
Nursery Sheetings and Crib Blankets
Rubber Surface Clothing
Aprons, Ponchos, Rubber Fabrics
Rubberizing for the Trade

Factory and Main Office, MILFORD, MASS.

MAGNESIA

WHITTAKER, CLARK & DANIELS, Inc.
250 Front Street, New York

VOORHEES RUBBER MFG. CO.
TRADE MARK

MANUFACTURES OF

SENSATION BELT. WATER, STEAM AND AIR HOSE. RUB-STEEL VALVES. AND A GENERAL LINE OF MECHANICAL RUBBER GOODS OF ULTIMATE ECONOMY.

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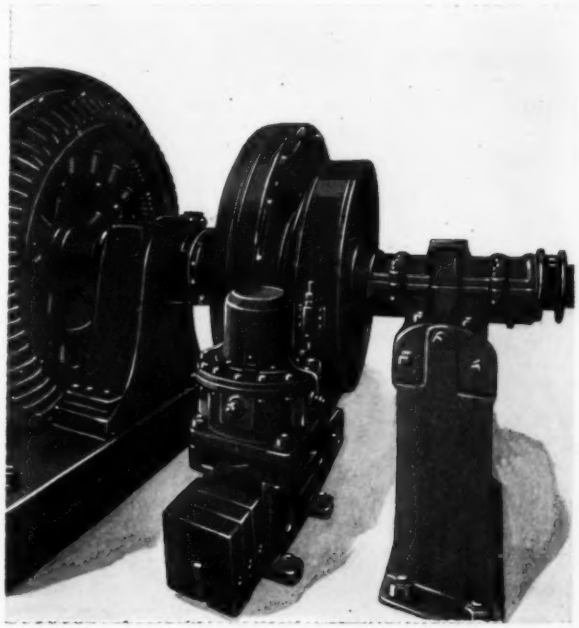
JERSEY CITY, N. J.

New York:
30 Reade St.



EASY TO INSTALL

Because of the compact construction, C-H Clutch-Brakes can be installed easily—making it possible to provide this safety equipment to machinery already in use as well as on new drives.

Our new Publication 3127 includes all necessary information, capacities, and dimensions. A copy will be mailed on request.

THE CUTLER-HAMMER MFG. CO.
Magnet and Clutch Department
Works: MILWAUKEE and NEW YORK
Offices and Agents in Principal Cities
Northern Elec. Co., Ltd., Canada

C-H CUTLER-HAMMER MAGNETIC CLUTCH-BRAKES

TEAR OUT AND MAIL

The Cutler-Hammer Mfg. Co.
Milwaukee, Wis.

Mail copy of new booklet Pub. No. 3127 on C-H Magnetic Clutch-Brakes for rubber mill service to

Name .....

Company Name.....

City or Town and State.....

RUBBER BUYERS' DIRECTORY — Rubber Machinery, Second Hand Machinery, Raw Materials and Supplies.

Transmission Machinery.
Allen Machine Co., Erie, Pa.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.

Tread Making Machines.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Trimmers.
Banner Machine Co., The, Columbiana, Ohio.
Morris, T. W., Chicago, Ill.
Willis, Arthur Jackson, North Brookfield, Mass.

Tube Coiling & Boxing Machines
H. Monroe Smith, Passaic, N. J.

Tube Cutting Machines.
H. Monroe Smith, Passaic, N. J.

Tube Wrapping Machines.
Akron Rubber Mold & Machine Co., Akron, Ohio.
Akron Standard Mold Co., Akron, Ohio.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Black Rock Mfg. Co., The, Bridgeport Conn.
Williams Foundry & Machine Co., The, Akron, Ohio.

Tubing Machines.
Adamson Machine Co., Akron, O.
Akron Rubber Mold & Machine Co., Akron, O.
Allen Machine Co., Erie, Pa.
Farrel Foundry & Machine Co., Ansonia, Conn.
Housatonic Mach. & Tool Co., Bridgeport, Conn.
Royle, John, & Sons, Paterson, N. J.
Williams Foundry & Machine Co., Akron Ohio.

Tubing Machine Attachments.
Automatic Revolving Fans.
Inside Soapstoning.
Outside Soapstoning.
Traveling Aprons.
H. Monroe Smith, Passaic, N. J.

Turbines—Steam.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Vacuum Cloth Impregnating Equipment.
Banner Machine Co., The, Columbiana, Ohio.
Buffalo Foundry & Machine Co., Buffalo, N. Y.
Devine, J. P., Co., Buffalo, N. Y.
Shaw, Francis, & Co., Ltd., Manchester, England.

Valve Grinders.
Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Quaker City Rubber Co., Philadelphia, Pa.

Valves.
Burroughs Co., The, Newark, N. J.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Farquhar, A. B., Co., Ltd., York, Pa.
Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.
Utility Manufacturing Co., Cudahy, Wis.
Yarnall-Waring Co., Philadelphia, Pa.

Valves (Reducing).
Mason Regulator Co., Dorchester, Mass.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

Valves—Two Pressure
Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Yarnall-Waring Co., Philadelphia, Pa.

Varnishing Machines.
Birmingham Iron Foundry, Derby, Conn.

Vulcanizers.
Adamson Machine Co., Akron, O.
Akron Equipment Co., The, Akron, Ohio.
Akron Rubber Mold & Machine Co., Akron, O.
Allen Machine Co., Erie, Pa.
Biggs Boiler Works Co., Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Devine, J. P., Co., Buffalo, N. Y.
Fisk Rubber Co., Chicopee Falls, Mass.

Vulcanizers—Continued.
Miller, Chas. E., Anderson, Ind.
Southwark Fdy. & Mach. Co., Phila, Pa.
Thropp's, John E., Sons Co., Trenton, N. J.
Thropp, William R., Sons' Co., Trenton, N. J.
Williams F. & M. Co., Akron, Ohio.

Washers.
Adamson Machine Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Buffalo Foundry & Machine Co., Buffalo, N. Y.
Devine, J. P., Co., Buffalo, N. Y.
Farrel F. & M. Co., Ansonia, Conn.
Shaw, Francis, & Co., Ltd., Manchester, England.
Thropp's, John E., Sons Co., Trenton, N. J.
Thropp, William R., Sons' Co., Trenton, N. J.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Washers—Light Steel for Rubber Heels.
Sessions, J. H., & Son, Bristol, Conn.

Washers—Setting Machine for Heel Molds.
Utility Manufacturing Co., Cudahy, Wis.

Worm Drives
Cleveland Worm and Gear Co., The, Cleveland, Ohio.

Wrapping Machines.
Adamson Machine Co., Akron, O.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Birmingham Iron Foundry, Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Miller, Chas. E., Anderson, Ind.

Wrapping Machines.
For Wrapping Bundles of Tires, Hose and Wire.
Terkelson Machine Co., Boston, Mass.

Wrapping Machines—Paper.
Terkelsen Machine Co., Boston, Mass.

SECOND-HAND MACHINERY

Albert, L., & Son, Trenton, N. J.
Barry, Lawrence N., Boston, Mass.
McGrory, Philip, Trenton, N. J.
Metzler, Robert J., Inc., Newark, N. J.
Norton, M., & Co., Medford, Mass.
United Rubber Machinery Exchange, Newark, N. J.

RAW MATERIALS AND SUPPLIES

Accelerators.
Bullock, E. L., & Sons, Inc., New York.
Dovan Chemical Corporation, New York.
Greeff, R. W., & Co., Inc., New York.
National Aniline & Chemical Co., New York.
Naugatuck Chemical Co., Naugatuck, Conn. (N. C. C.)
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Rubber Service Laboratories Co., The, Akron, Ohio.
Vanderbilt, R. T., Co., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Acids.
Barrett Co., The, New York.
Bullock, E. L., & Sons, Inc., New York.
Cooper & Cooper, Inc., New York.
Grasselli Chemical Co., New York.
Greeff, R. W., & Co., Inc., New York.
National Aniline & Chemical Co., New York.
Naugatuck Chemical Co., Naugatuck, Conn.
Pfaltz & Bauer, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Acids—Sulphuric
Cooper & Cooper, Inc., New York.
Mineral Point Zinc Co., Chicago, Ill.
New Jersey Zinc Co., New York.
Pfaltz & Bauer, Inc., New York.
Scheel, William H., New York.

For Complete Addresses See Advertisements—Index Page 108

DIPHENYL-GUANIDINE

Scorching? Not with D. P. G.

Diphenyl-Guanidine is an exceedingly active accelerator, and its critical temperature insures almost complete freedom from scorching. This makes it especially valuable in heavily compounded stocks. Where a union of magnesia and Diphenyl-Guanidine is desired, X L O accelerator is recommended.

Dovan Chemical Corporation
30 Church Street New York

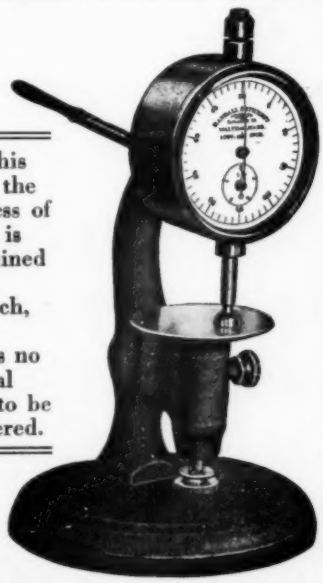
REPRESENTED BY

J. A. Kendall, Akron, Ohio; J. E. Odell, Boston, Mass.; American Oil & Supply Co., Trenton, N. J.; T. E. O'Reilly, Ltd., Toronto; Martin, Hoyt & Milne, San Francisco and Los Angeles; Buckleton & Nourry, Ltd., 13 Rumford St., Liverpool, England

DOVAN

The Efficiency Rubber Gauge

(The Randall and Stickney Thickness Gauge)



With this Gauge the thickness of rubber is determined within .001 inch, and there is no personal factor to be considered.

This instrument has been in use by the leading Rubber Manufacturers of this country and Canada for fifteen years.

Operated by a Standard Pressure on a Standard Area

Send for Descriptive Circular and Prices

FRANK E. RANDALL, Waltham, Mass.

The Slightest Movement Brings Instant Response

The Yarway Hydraulic Valve is small —It can be operated by a short lever through a 90° arc. And it is sensitive, instantly responding to a very slight movement.

This means easy operation and more sensitive presses—speedier production and lower costs. A Yarway Hydraulic Valve on each of your presses will minimize waste.

Built to stand up under the hardest service. Bushings and plug are always in contact under pressure and automatically remain t i g h t — the greater the pressure, the tighter the valve.

Booklet H-2 contains full details. Write today for your copy.

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7602-20 Queen St.
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Offices in all Principal Cities

YARWAY
Hydraulic Valve
(Caskey Patents)

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Alba Whiting.

Harshaw, Fuller & Goodwin Co., The Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Aluminum Flake.

Aluminum Flake Co., Barberton, Ohio.
Scheel, William H., New York.

Aniline

Bullock, E. L., & Sons, Inc., New York.
Cooper & Cooper, Inc., New York.
Grasselli Chemical Co., New York.
Innis, Speiden & Co., Inc., New York City.
National Aniline & Chemical Co., New York.
Naugatuck Chemical Co., Naugatuck, Conn.
Pfaltz & Bauer, Inc., New York.
Rubber Service Laboratories Co., Inc., The, Akron, Ohio.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Antimony, Sulphurets of.

Golden and Crimson.

Atlas Chemical Co., Waltham, Mass.
Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.

Antimony—Sulphurets of—Continued.

Naugatuck Chemical Co., Naugatuck, Conn.
Pfaltz & Bauer, Inc., New York.
Rare Metal Products Co., Belleville, N. J.
Roessler & Hasslacher Chemical Co., New York.
Rubber Service Laboratories, The, Akron, Ohio.
Scheel, William H., New York.
Typke & King, Ltd., Mitcham, England.
Tyson Bros., Inc., Woodbridge, N. J.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Arsenic, Yellow

Butcher, L. H., Co., Inc., New York.

Artificial Rubber.

Ashley, T. C., & Co., Boston, Mass.
Carter Bell Mfg. Co., New York.
Scheel, William H., New York.
Stamford Rubber Supply Co., Stamford, Conn.
Typke & King, London, England.
Tyson Bros., Inc., Woodbridge, N. J.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Asbestine.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., The Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
International Pulp Co., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Balata.

Astlett & Co., H. A., New York.
Chipman, R. L., New York.
Dunbar, J. Frank, Co., Inc., New York.
Hardy, R. S., Co., New York City.
Jacoby, Ernest, Boston, Mass.

Balata—Continued.

Wood, Charles E., New York.

Barium Dust.

Vanderbilt, R. T., Co., New York.

Barium Sulphate—See Barytes
Barium Sulphate Precipitated—See Blanc Fixe

Barytes.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Osborn, C. J., Co., New York.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York, N. Y.
Thompson, Weinman & Co., Inc., New York.
Tyson Bros., Inc., Woodbridge, N. J.
Vanderbilt, R. T., Co., New York.
Waldo, E. M., & F., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Basofor.

Waldo, E. M., & F., Inc., New York.

Benzol.

Barrett Co., The, New York.
Bullock, E. L., & Sons, Inc., New York.
Cabot, Samuel, Boston, Mass.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Scheel, William H., New York.
Tyson Bros., Inc., Carteret, N. J.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Black Hypo.

Bullock, E. L., & Sons, Inc., New York
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., The Cleveland, Ohio.
Pfaltz & Bauer, Inc., New York.
Scheel, William H., New York.
Typke & King, London, England.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Blanc Fixe.

Bullock, E. L., & Sons, Inc., New York
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Vanderbilt, R. T., Co., New York.
Waldo, E. M., & F., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Bolted Lime.

Bullock, E. L., & Sons, Inc., New York
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Pfaltz & Bauer, Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Cadmium Yellow.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.

For Complete Addresses See Advertisements—Index Page 108

QUALITY SEALS
T&K
TYPKE & KING'S
GOLDEN CRIMSON VERMILION
ANTIMONIES
ORIGINAL STANDARDS UNEXCELLED
YOUR GUARANTEE
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(See Page 32)
WE ARE EXCLUSIVE U. S. AGENTS CARRYING NEW YORK STOCKS LOOK FOR THE SEAL—NOT GENUINE WITHOUT IT

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ULTRAMARINE BLUE—PALM OIL CLARIFIED—INDIA RUBBER YELLOW
CLAYS—MAGNESIA—ASBESTINE—WHITING

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SCRAP RUBBER

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and

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From the Beginning of Tires—

From the building of the first pneumatic tires in Akron to the latest development on Balloon Tires, AKRON-WILLIAMS molds, cores and other tire factory equipment, have been noted for their accuracy, simplicity and economy.

Our standard patterns and forming tools for cutting approved designs of beads, etc., on regular Fabric and Cord tires have saved manufacturers thousands of dollars. Both time and money may now be saved by taking advantage of our early intimate experience on Balloon tires.

Put our engineering department to work on your problem.

THE WILLIAMS FOUNDRY & MACHINE CO.

"In business since 1888"

AKRON, OHIO

AKRON-WILLIAMS A-W "PRODUCTS"

WOVEN STEEL HOSE & RUBBER COMPANY

Manufacturers of **Long Length Moulded Hose**

On Reels of Approximately 500 Feet For Air and Water

ARMORED OR PLAIN LOCOMOTIVE SQUIRT HOSE COMPLETE WITH FITTINGS

Mechanical Rubber Goods **Automobile Brake Lining**

TRENTON, N. J., U. S. A.

RUBBER BUYERS' DIRECTORY — Raw Materials and Supplies.

Cadmium Yellow—Continued.

Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Waldo, E. M., & F., Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Carbon Bisulphide and Tetrachloride.

Bullock, E. L., & Sons, Inc., New York.
Cooper & Cooper, Inc., New York.
Dow Chemical Co., The, Midland, Mich.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
National Aniline & Chemical Co., New York.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Carbon Black.

Barrett Co., The, New York.
Binney & Smith Co., New York.
Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cabot, Godfrey L., Boston, Mass.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Huber, J. M., Inc., New York.
Innis, Speiden & Co., Inc., New York City.
Osborn, C. J., Co., New York.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Seaver & Co., Boston, Mass.
United Oil & Natural Gas Products Corp., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Caustic Soda.

Bullock, E. L., & Sons, Inc., New York.
Cooper & Cooper, Inc., New York.
Grasselli Chemical Co., New York.
Dow Chemical Co., The, Midland, Mich.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Cement (Rubber).

Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Hale, Alfred, Rubber Co., Boston, Mass.
New York Belting & Packing Co., N. Y.
United States Rubber Co., New York.

Chemicals and Ingredients.

Ashley, T. C., & Co., Boston, Mass.
Barrett Co., The, New York.
Binney & Smith Co., New York.
Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Grasselli Chemical Co., New York.
Greeff, R. W., & Co., Inc., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
National Aniline & Chemical Co., New York.
Osborn, C. J., Co., New York.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Tyson Bros., Inc., Woodbridge, N. J.
Vanderbilt, R. T., Co., New York, N. Y.
Waldo, E. M., & F., Inc., New York.
Westmoreland Chemical & Color Co., Philadelphia, Pa.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

China Clay.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Rubber Service Laboratories, The, Akron Ohio.
Scheel, William H., New York, N. Y.
Taintor Co., The, New York.
Vanderbilt, R. T., Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Williams & Co., C. K., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Colors.

Ault & Wiborg Co., The, Cincinnati, Ohio.
Binney & Smith Co., New York.
Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Huber, J. M., Inc., New York.
Innis, Speiden & Co., Inc., New York City.
McNulty, Joseph A., New York.
National Aniline & Chemical Co., New York.
Osborn, C. J., Co., New York.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co. New York.
Rubber Service Laboratories, The, Akron. Ohio.
Scheel, William H., New York.
Typke & King, London, England.
Tyson Bros., Inc., Woodbridge, N. J.
Waldo, E. M., & F., Inc., New York.
Westmoreland Chem. & Color Co., Philadelphia, Pa.
Whittaker, Clark & Daniels, Inc., New York.

Colors—Continued.

Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Colors—Balloon.

Ault & Wiborg Co., The, Cincinnati, Ohio.
Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Grasselli Chemical Co., New York.
National Aniline & Chemical Co., New York.

Cotton Flock.

Claremont Waste Mfg. Co., Claremont, N. H.

Cotton Goods.

Ducks and Drills.

Adams, H. J., Co., The, Akron, Ohio.
Callaway Mills, Inc., New York.
Curran & Barry, New York.
Hewins, E. D., Inc., Boston, Mass.
Kavanaugh, Geo. W., New York.
Lane, J. H., & Co., New York and Chicago.
Lawrence & Co., New York.

Tire Tape.

Adams, H. J., Co., The, Akron, Ohio.
Kavanaugh, Geo. W., New York.

Hollands.

Kavanaugh, Geo. W., New York.

Osnaburgs.

Adams, H. J., Co., The, Akron, Ohio.
Callaway Mills, Inc., New York.
Curran & Barry, New York.
Kavanaugh, Geo. W., New York.
Lane, J. H., & Co., New York and Chicago.

Sheetings.

Adams, H. J., Co., The, Akron, Ohio.
Callaway Mills, Inc., New York.
Kavanaugh, Geo. W., New York.
Lane, J. H., & Co., New York and Chicago.

Stockinettes.

United States Knitting Co., Pawtucket, R. I.

Tire Fabrics.

Adams, H. J., Co., The, Akron, Ohio.
Bibb Mfg. Co., Macon, Ga.
Brighton Mills, Passaic, N. J.

For Complete Addresses See Advertisements—Index Page 108

Baird Rubber & Trading Co.

233 BROADWAY, NEW YORK

Telephone, Whitehall 6890 Cable Address: CHAUNBAIR, NEW YORK

CRUDE RUBBER

RUBRAX

MANUFACTURERS OF

ELASTIC Hydro-Carbons

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PHILADELPHIA, PENNSYLVANIA

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Liverpool, England

THE INTEROCEAN OIL COMPANY

90 West Street, NEW YORK

George W. Kavanaugh, Inc.
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38 N. Second St., Philadelphia

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Plain — Tire Tapes — Loop Edge
Enameling Duck, Drills, Sheetings, Osnaburgs
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TYSON BROS. INC.
WOODBRIDGE N. J.
MANUFACTURERS
The best grades of Rubber Substitutes and Chemicals for all branches of the Rubber Trade
Western Representative
J. A. KENDALL
524 Second National Bldg., Akron, Ohio
STOCK CARRIED IN AKRON

WOBURN OIL
A New Rubber Softener
THE WOBURN DEGREASING CO.
HARRISON, N. J.

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Trenton, N. J.

UNITED STATES KNITTING CO.
Pawtucket, R. I.
since 1888 mfrs. of
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and fine worsted
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for the rubber shoe trade.
Also
Special Stockinet Fabrics
for the general rubber trades
Western Rep.—A. L. PARDEE
512 Ohio Bldg., Akron, Ohio.
Canadian and Export Trade served by
CANADIAN U.S. KNITTING CO., Ltd.
St. Hyacinthe, P. Q., Canada

OHMLAC PRODUCTS
OHMLAC KAPAK
(Refined Elaterite)
For The Rubber Trade
The finest quality of Hydrocarbon Compounds made. Write us today about your requirements.
Ohmlac Paint & Refining Co.
Refinery and Manufacturing Plant: Clearing, Ill.
General Offices—Marquette Building, Chicago

RUBBER BUYERS' DIRECTORY —Raw Materials and Supplies.

Cotton Goods—Continued.

Tire Fabrics—Continued.

Cabarrus Cotton Mills, Kannapolis, N. C.
Caldwell, B. J., Co., Inc., New York.
Callaway Mills, Inc., New York.
Hewins, E. D., Inc., Boston, Mass.
Kavanaugh, Geo. W., New York.
Lane, J. H., & Co., New York and Chicago.
Lawrence & Co., New York.
Salmon Falls Mfg. Co., Boston, Mass.
Taylor, Armitage & Eagles, Inc., New York.

Crêpe Soling.

Buckleton & Company, Limited, Liverpool, England.
Hankin, Geo., & Co., London, England.
Henderson, F. R., & Co., New York.
Jacoby, Ernest, Boston, Mass.

Crude Rubber—Importers and Exporters.

Anglo Eastern Trading Co., Inc., New York.
Araujo, J. G., Manaos, Brazil, S. A.
Astlett, H. A., & Co., New York.
Baird Rubber & Trading Co., New York.
Chalfin, Joseph, & Co., Inc., New York.
Hankin, Geo., & Co., London, England.
Henderson, F. R., & Co., New York.
Hirsch, Adolph, & Co., New York.
Muehlstein, H. & Co., Inc., New York.
Wilson, Charles T., Co., Inc., New York.

Crude Rubber Brokers.

Buckleton & Company, Limited, Liverpool, England.
Chipman, R. L., New York.
Dunbar, F. W., & Co., New York.
Dunbar, J. Frank, Co., Inc., New York.
Estates Crude Rubber Corp., New York
Hardy, Roger S., New York.
Jacoby, Ernest, Boston, Mass.
Wood, Charles E., New York.

Crude Rubber—Latex.

Buckleton & Company, Ltd., Liverpool, England.
Hankin, Geo., & Co., London, England—Byles, W. E., New York, Agent.
Hardy, R. S., Co., New York.
Henderson, F. R., & Co., New York.
Jacoby, Ernest, Boston, Mass.
Vanderbilt, R. T., New York, N. Y.

Crude Rubber—Washed and Dried.

Acushnet Process Co., New Bedford, Mass.
Anglo-Eastern Trading Co., Inc., New York.
Araujo, J. G., Manaos, Brazil, S. A.
Continental Rubber Co., New York.

Diatomite.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.

Fillers.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Innis, Speiden & Co., Inc., New York.
Moore & Munger, New York, N. Y.
Pfaltz & Bauer, Inc., New York.
Thompson, Weinman & Co., Inc., New York.
Vanderbilt, R. T., New York, N. Y.
Whittaker, Clark & Daniels, Inc., New York.

Fossil Flour—Infusorial Earth.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Pfaltz & Bauer, Inc., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., New York.

Gilsonite.

Bullock, E. L., & Sons, Inc., New York.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Graphite.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Innis, Speiden & Co., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Green Oxide of Chromium.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Waldo, E. M., & F., Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Guayule Rubber.

Continental Rubber Co., New York.
Wilson, Charles T., Co., Inc., New York.

Gutta-Percha.

Astlett, H. A., & Co., New York.
Baird Rubber & Trading Co., New York.
Chipman, R. L., New York.
Dunbar, J. Frank, Co., Inc., New York.
Hankin, Geo., & Co., London, England.
Hardy, R. S., Co., New York City.
Jacoby, Ernest, Boston, Mass.
Wood, Charles E., New York.

Hard Rubber Dust.

Muehlstein, H., & Co., Inc., New York.

Hexamethylene Tetramine

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Grasselli Chemical Co., New York.
Roessler & Hasslacher Chemical Co., The, New York.

Hydro-Carbon Products.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Ohlmac Paint & Refining Co., Chicago, Ill.
Robertson, H. H., Co., Pittsburgh, Pa.
Scheel, William H., New York.
Vanderbilt, R. T., Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Infusorial Earth — See Fossil Flour.

Iron Oxide—See Red Oxide

Lampblack.

Binney & Smith Co., New York.
Bullock, E. L., & Sons, Inc., New York.
Butcher L. H. Co. Inc. New York.
Cabot, Samuel, Boston, Mass.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Osborn, C. J., Co., New York.
Pfaltz & Bauer, Inc., New York.
Tyson Bros., Inc., Woodbridge, N. J.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Lead—Blue.

Lead—Sublimed White.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Lime Flour.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Pfaltz & Bauer, Inc., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., N. Y.

Liners, Treated.

Cleveland Liner & Mfg. Co., The, Cleveland, Ohio.

Litharge.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co. New York.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Lithopone.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Grasselli Chemical Co., New York.
Greeff, R. W., & Co., Inc., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York.
Mineral Point Zinc Co., Chicago, Ill.
New Jersey Zinc Co., New York.
Osborn, C. J., Co., New York.
Pfaltz & Bauer, Inc., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., N. Y.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Magnesia Carbonate

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York.
National Aniline & Chemical Co., New York.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., N. Y.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Magnesia Oxide (Calcined)

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Grasselli Chemical Co., New York.
Innis, Speiden & Co., Inc., New York.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

For Complete Addresses See Advertisements—Index Page 108

We Manufacture a Variety of Shades of

RED OXIDE OF IRON

particularly adapted for
RUBBER MANUFACTURERS' USE

Extremely strong in coloring power and ground impalpably fine. Also various grades of Talc, Soapstone and Asbestine. Write us for samples and prices.

C. K. WILLIAMS & CO. Easton, Pa.

Pacific Coast Representative, Marshall Dill

216 Pine St., San Francisco, Calif

Always
Use
AZO-ZZZ

The
Better Buy

There is *no small* difference between zincs. Wherever quality counts,—and it should be the determining factor always—AZO-ZZZ stands pre-eminent.

The very fact that it is lead-free is one reason. Then it is WHITE and it remains WHITE—no trace of blue, black or yellow or any other tint to mar its dazzling brilliancy.

You'll enjoy a great sense of satisfaction in using AZO-ZZZ. It simplifies mixing and using and gives you a decided improvement in results. And it IS results that count after all. Write for sample. You will sell yourself.

American Zinc Sales Company
Columbus, Ohio.

Pierce Building, St. Louis 331 Madison Ave., New York

USMC Trimming Machine Models A & B

The USMC Trimming Machine is especially designed to meet the exacting demands of the rubber heel or sole manufacturer who wants to trim the product both accurately and economically in one operation. It can also be used profitably on numerous other mechanical goods.

USMC Trimming Machine Model B—Motor Drive

This machine insures perfect protection to both operator and stock, thereby increasing production and reducing the loss in "seconds" to a minimum.

Its capacity is equal to that of any like machine of similar design on the market, when used in connection with flat heels, and is much greater when used on cupped heels or heels of unusual shape and short radii. It will pay you to investigate and we shall be glad to furnish information upon request.

United Shoe Machinery Corporation
BOSTON, MASSACHUSETTS

Auburn, Me., 87 Main
Brockton, Mass., 93 Centre
Cincinnati, 708 Broadway
Chicago, 18 South Market
Haverhill, Mass., 145 Essex
Johnson City, N. Y., 276 Main
Lynn, Mass., 306 Broad
Marlboro, Mass., 11 Florence
Milwaukee, 258 Fourth
New Orleans, 216 Chartres
New York, 37 Warren
Philadelphia, 221 North 13th
Rochester, N. Y., 130 Mill
St. Louis, 1423 Olive
San Francisco, 859 Mission

RUBBER BUYERS' DIRECTORY —Raw Materials and Supplies.

Marking and Stencil Ink.

Binney & Smith Co., New York, N. Y.

Mica.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., N. Y.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Mineral Rubber.

Barber Asphalt Co., Philadelphia, Pa.
Barrett Co., The, New York.
Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York.
Inter-Ocean Oil Co., New York.
Ohlmac Paint & Refining Co., Chicago, Ill.
Pioneer Asphalt Co., Lawrenceville, Ill.
Rare Metal Products Co., Belleville, N. J.
Robertson, H. H., Co., Pittsburgh, Pa.
Scheel, William H., New York.
Synthetic Products Co., Cleveland, Ohio.
Vanderbilt, R. T., Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Oils—Palm.

Butcher, L. H., Co., Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Oils—Tar, Pine, Creosote, Rosin, Turpentine.

Barrett Co., The, New York.
Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Oils—Vegetable.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Petrolatum.

Bullock, E. L., & Sons, Inc., New York.
Vanderbilt, R. T., Co., New York.

Pigments.

Aluminum Flake Co., Barberton, Ohio.
Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.

Pigments—Continued.

Mineral Point Zinc Co., Chicago, Ill.
New Jersey Zinc Co., The, New York.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Waldo, E. M. & F., Inc., New York.
Westmoreland Chemical & Color Co., Philadelphia, Pa.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Pine Tar.

Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Pitch.

Bullock, E. L., & Sons, Inc., New York.
Rubber Service Laboratories, The, Akron, Ohio.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Polishing Compounds—Hard Rubber

Nulite Polish Co., Inc., Brooklyn, N. Y.

Precipitated Chalk.

Bullock, E. L., & Sons, Inc., New York.
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Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Pumice Stone.

Bullock, E. L., & Sons, Inc., New York.
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Pfaltz & Bauer, Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

"Quaker" Whiting.

Vanderbilt, R. T., Co., New York.
Whittaker, Clark, & Daniels, Inc., New York.

Reclaimed Rubber.

Appleton Rubber Co., Boston, Mass.
Baird Rubber & Trading Co., New York (Agent).
Clapp, E. H., Rubber Co., Boston, Mass.
Dunbar, J. Frank, Co., Inc., New York.
McGrory, Philip, Trenton, N. J. (Agent.)
Nearpara Rubber Co., Trenton, N. J.
New Jersey Rub. Co., Lambertville, N. J.
Pequanoc Rubber Co., Butler, N. J.
Philadelphia Rubber Works, Philadelphia, Pa.
Rubber Regenerating Co., Naugatuck, Conn.
Somerset Rubber Reclaiming Works, New Brunswick, N. J.

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Tyson Bros., Inc., Woodbridge, N. J.
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Westmoreland Chemical & Color Co., Philadelphia, Pa.
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Wishnick-Tumpeer Chemical Co., Chicago, Ill.

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Bullock, E. L., & Sons, Inc., New York.
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Rotten Stone.

Bullock, E. L., & Sons, Inc., New York.
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Pfaltz & Bauer, Inc., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., New York.

Rubber Flux.

Synthetic Products Co., Cleveland, Ohio.
Vanderbilt, R. T., Co., New York, N. Y.

Rubber Makers' White.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Rubber Softener.

Barrett Co., The, New York.
Rubber Service Laboratories, The, Akron, Ohio.
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Woburn Degreasing Co., The, Harrison N. J.

Rubber Substitutes.

Ashley, T. C., & Co., Boston, Mass.
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Butcher, L. H., Co., Inc., New York.
Carter Bell Mfg. Co., New York.
Jacoby, Ernest, Boston, Mass.
Scheel, Wm. H., New York.
Stamford Rubber Supply Co., Stamford, Conn.
T. H. & B. Chemical Co., So. Boston, Mass.
Typke & King, London, England.
Tyson Bros., Inc., Woodbridge, N. J.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Scrap Rubber.

Birkenstein, S., & Sons, Chicago, Ill.
Chalfin, Joseph, & Co., Inc., New York
Cummings, Wm. H., & Sons, New York.
McGrory, Philip, Trenton, N. J.
Muehlstein, H., & Co., Inc., New York.
Norton, M., & Co., Medford, Mass.
Schnurmann, J., London, England.
Weber, Hermann, New York.

Silica.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
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Innis, Speiden & Co., Inc., New York City.
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Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Slate Flour.

Butcher, L. H., Co., Inc., New York.
Cooper & Cooper, Inc., New York.

Soapstone.

Binney & Smith Co., New York.
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Solvents

Barrett Co., The, New York.
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Naphtha.

Hartol Products Corp., Newark, N. J.
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Sulphur.

Battelle & Renwick, New York.
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Southern Acid & Sulphur Co., St. Louis, Missouri
Stauffer Chemical Co., Houston, Texas.

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Talc.

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Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Thiocarbanilid.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
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Rubber Service Laboratories Co., Inc., The, Akron, Ohio.

Tripoli Flour.

Bullock, E. L., & Sons, Inc., New York.
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Ultramarine Blue

Butcher, L. H., Co., Inc., New York.

Unvulcanized Rubber

Gibraltar Rubber Corp., West New York, N. J.

Wax

Bullock, E. L., & Sons, Inc., New York.
Dunbar, J. Frank, Co., Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Scheel, William H., New York.
Tidewater Chemical Co., Inc., New York.
Vanderbilt, R. T., Co., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

White and Blue Lead, Sublimed.

Butcher, L. H., Co., Inc., New York.
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Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Tidewater Chemical Co., Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill

Whiting.

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Pfaltz & Bauer, Inc., New York.

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Roessler & Hasslacher Chemical Co., New York.
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Southwark Manufacturing Co., Camden, N. J.
Talntor Co., The, New York.
Thompson, Weinman & Co., Inc., New York.
Tidewater Chemical Co., Inc., New York.
Tyson Bros., Inc., Woodbridge, N. J.
Vanderbilt, R. T., & Co., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Wood Flour.

Bullock, E. L., & Sons, Inc., New York.
Tidewater Chemical Co., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Woolgrease (Lanolin)

Butcher, L. H., Co., Inc., New York.

Zinc, Oxide of.

American Zinc Sales Co., New York.
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Cooper & Cooper, Inc., New York.
Grasselli Chemical Co., New York.
Greeff, R. W., & Co., Inc., New York.
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Innis, Speiden & Co., Inc., New York City.
Mineral Point Zinc Co., Chicago, Ill.
National Aniline & Chemical Co., New York.
New Jersey Zinc Co., New York.
Osborn, C. J., Co., New York.
Pfaltz & Bauer, Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Tidewater Chemical Co., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Zinc Substitute.

Bullock, E. L., & Sons, Inc., New York.
Butcher, L. H., Co., Inc., New York.
Pfaltz & Bauer, Inc., New York.
Scheel, William H., New York.
Tidewater Chemical Co., Inc., New York.

Zinc Sulphide.

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Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Pfaltz & Bauer, Inc., New York.

MISCELLANEOUS

Banking.

International Acceptance Bank, Inc., New York.

Consulting Rubber Chemists.

Maywald, Dr. F. J., Belleville, N. J.
Puttle, John B., New York.
Weber, Dr. Lothar E., Boston, Mass.

Consulting Rubber Engineer.

Dunbar, Wilmer, Greensberg, Pa.

Consulting Rubber Technologists.

Norris, Webster, Hempstead, N. Y.
Maywald, F. J., Dr., Belleville, N. J.
Puttle, John B., New York.

Factory Lighting.

Hewitt Cooper Electric Co., Hoboken, N. J.

Rubber Plant Engineers

Consulting Co., The, Cincinnati, Ohio.
Osborn Engineering Co., The, Cleveland, Ohio.
Rubber Engineering Co., Akron, Ohio.
Welton, P. E., Engineering Co., The, Akron, O.

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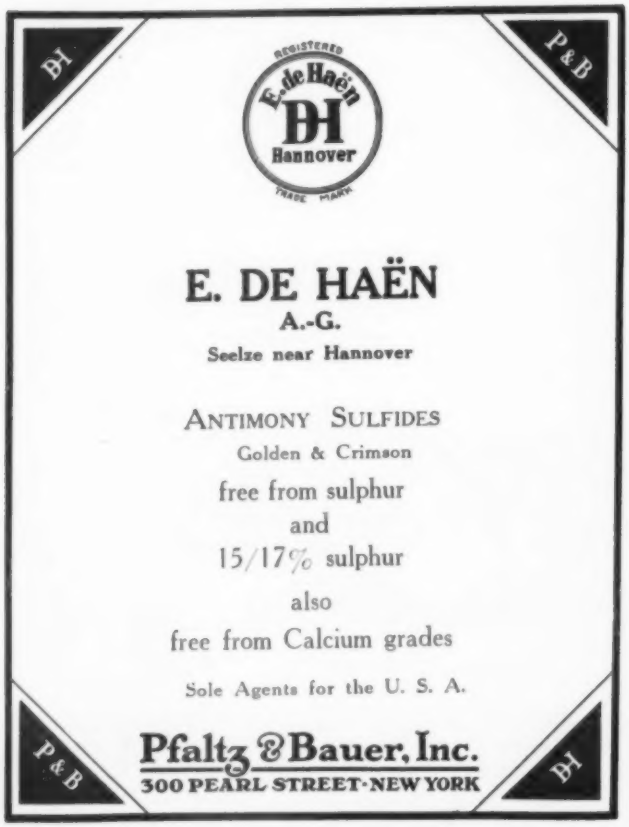

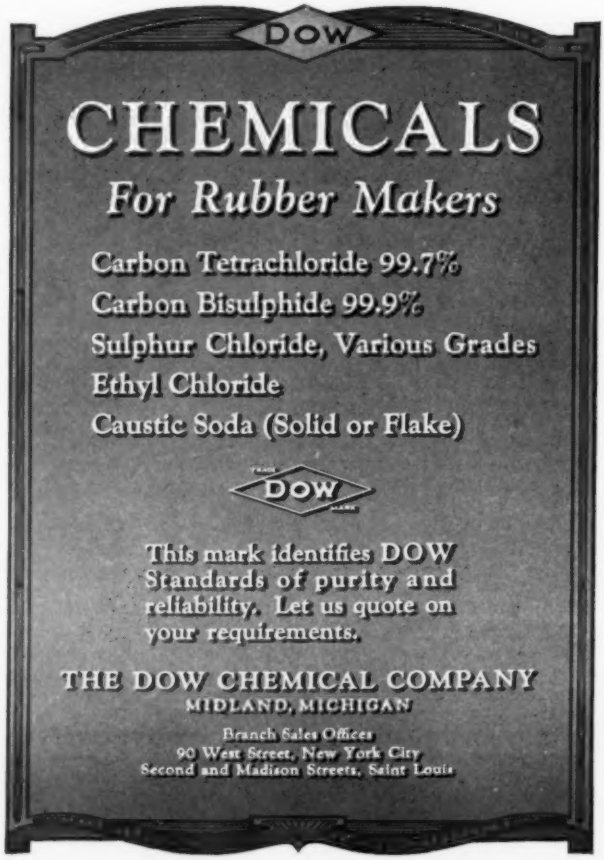

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Monatiquot Reclaiming Division

STEDMAN PRODUCTS COMPANY

South Braintree, Massachusetts

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